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CANCER IN DOMESTIC ANIMALS*

MAXIMILIAN HERZOG, M.D.
CHICAGO

Neoplasms are generally divided into so-called benign and malignant tumors. This classification rests largely on a clinical basis, and while convenient, is inaccurate and arbitrary. No tumor is absolutely, but at best only relatively, benign and at all times must be looked on as a pathologic, eventually dangerous, process. Neoplasms which according to their histologic and histogenetic features are most commonly benign, may exhibit malignant properties, and *vice versa*, neoplasms which histologically have all the ear-marks of malignancy may fail to develop their destructive and metastatic tendencies, may become encapsulated, self-limited, and may finally disappear spontaneously. These observations made with reference to tumors in man, are also fully confirmed in the study of tumors of domestic animals. Tumors with manifest malignant properties are popularly generally known as cancers, and indeed, the common malignant and destructive features of such tumors call, within certain boundaries, for collective consideration from a clinical standpoint, and even from that of etiologic research. We have, however, learned to distinguish neoplasms according to their histology and histogenesis and among the malignant tumors we find a certain group which take their origin from epithelial cells and which are known as the cancers proper — the carcinomata. They are defined as atypical epithelial neoplasms. There appears to be little doubt that carcinoma in man is markedly, nay alarmingly, on the increase among the civilized nations of the world. It is true that the figures as furnished by vital statistics must be analyzed critically and that considerable allowance must be made for a more general and a more reliable diagnosis during the last decades when compared with the figures of former times. However, in spite of all this,

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the best judges are unanimous in their opinion that cancer in man is on the increase. Whether carcinoma and malignant tumors in general are on the increase among domestic animals is a question which cannot be answered properly at this time. I have in vain searched the literature for any reliable collective statistics on this point. However, personal observations have convinced me that malignant tumors in general and carcinomata in particular are much more common among domestic animals than is generally known to the laity and to the medical profession as well.

I have examined microscopically during the last five years many cases of carcinoma in horses, cattle, sheep, swine, dogs and cats. Part of this material came from the surgical clinics of the Chicago Veterinary College, part from post-mortem examinations in animals killed on account of well-advanced inoperable tumors, another portion from accidental discoveries at autopsies and in the dissecting room, and still another portion was made accessible to me through the kindness of Dr. E. L. Day, the pathologist in charge of the Chicago Laboratory of the Bureau of Animal Industry, where a wealth of material not duplicated anywhere in the world is annually received from the stock yards.

Carcinoma as encountered among the domestic animals does not differ histologically or clinically from carcinoma as found in man. In both instances we are dealing with an atypical epithelial neoplasm. The proliferating epithelial cells become anaplastic, they deviate more or less from the type of the mother cells, they invade the connective tissue, first penetrating along the lines of least resistance, that is generally along the lymph clefts, lymph-vessels and lymph-spaces. They first form an everywhere continuous reticulum of cell-bands, strands and masses, they later on may become detached from these continuous masses and then form true closed alveolar nests, surrounded everywhere by connective tissue. Atypical, irregular, assymetric and multipolar karyokinetic figures, giant cells, cell inclusions, are found in the epithelial cells of carcinoma in domestic animals as well as in man. These cells frequently present their normal changes such as keratohyalin and keratin formation or the formation of true colloid material or they may show a metaplasia and assume characters not seen in the normal cells of the same type. Fatty or glycogenic degeneration, myxoid and colloid material are frequently found in carcinoma in the lower animals. Calcareous deposits are, I think, much more frequently found in carcinoma in domestic animals than in man. Another process more frequently encountered in carcinoma in domestic animals is that of ossification. In some cases this appears clearly due to the fact that carcinomata in animals in some locations exhibit an early tendency to invade the bone. Here they produce necrosis and destruction, but the proliferating tumor cells evidently then include small islands of osseous tissue from which osteoplastic processes with new formation of bone start, as indicated by the presence of very numerous osteoblasts.

Such is clearly the *modus operandi* in carcinomata arising from the mucosa of the jaws of dogs and horses, of which I have seen a number of cases. In other cases of carcinoma with osseous tissue found in domestic animals, this mode of bone formation, however, is not evident, and we

here, perhaps, deal with embryonic inclusions of bone tissue and with neoplasms which ought to be designated as primary osteocarcinomata. The reaction of the matrix of connective tissue in which the carcinoma grows may, as in man, be very intense, or it may be very insignificant. We may find a powerful layer of granulation tissue surrounding the advancing epithelial neoplasm or we may encounter an almost complete lack of inflammatory reaction. Metastasis formation in carcinoma of domestic animals follows the same laws as usually observed in man; however, cancers in horses, cattle and dogs may have existed for a comparatively long time without having given rise to daughter tumors. In other words, carcinoma in domestic animals apparently varies much more in its malignancy than it generally does in man. I recall a case of a mammary tumor in a bitch 14 years old. The tumor had existed for several years, it had become encapsulated, and had not, as found at autopsy, given rise to metastases, though histologically it proved to be a typical adenocarcinoma. Another feature in which carcinoma in domestic animals frequently behaves differently from the same kind of neoplasm in man is the following: carcinoma in man generally leads to early regressive changes with necrosis and ulceration. In domestic animals we find carcinomata which attain a large size without showing any necrotic changes. I have seen such cases in horses and dogs; on the other hand, carcinoma in the horse, on the sheath, the penis, the alveolar mucosa of the maxillæ, may early lead to necrosis and ulceration. In domestic animals, as in man, carcinoma frequently develops in certain places of predilection in which there has been a chance for the development of a so-called precancerous state or condition, brought about by long-continued irritation, hyperplastic changes or cicatrix formation. In cattle not infrequently skin cancers start from cicatrices formed after branding. Swine develop carcinoma under the chin in consequence of chafing; in horses we frequently see carcinoma of the sheath (prepuce) and of the glans penis in geldings as well as in stallions. These animals also often have carcinoma of the lips, of the buccal mucosa, the conjunctiva. Cancer of the anus of the dog is frequent, perhaps in consequence of the frequency with which these animals rub this region on the ground. Cancer of the mammary gland of old bitches is very common. Struma colloidea in the dog not infrequently leads to carcinoma of the thyroid, these tumors being generally quite malignant and soon leading to extensive metastasis formation. The examples cited are all examples of external carcinomata, but cancers of the internal organs, while not as frequent as the former, occur in all domestic animals. Interesting neoplasms which are probably still best classified with the carcinomata, though grouped separately, are the hypernephromata. Of these I have seen cases in cattle, sheep and dogs. The classification of these peculiar and interesting tumors, which form their metastases both in man and animals according to the sarcoma type and not as carcinomata almost universally do, has become quite doubtful on account of many conflicting views. Grawitz advanced the hypothesis that these neoplasms are derived from embryonic inclusions of suprarenal tissue. This view has recently been again confirmed by Winkler, who,

studied a large number of these neoplasms. Sudeck and Stoerk believe that the so-called Grawitz tumors are renal adenocarcinomata arising from renal epithelium, while Adami thinks that they are of mesothelial origin, i. e., starting from undifferentiated cells of that part of the mesoderm which furnishes the epithelial cells of the Wolffian body and other abdominal structures of mesodermal origin. Wilson somewhat similarly believes that these tumors are the result of the proliferation of islets of renal blastema (nephrogenic tissue) which have persisted in the cortex of the adult kidney. From what I have seen of such tumors in cattle, sheep and the dog, I am still inclined to believe in the correctness of Grawitz's hypothesis, namely that these peculiar tumors are derived from embryonic remnants of suprarenal tissue, and hence ought to be called properly hypernephromata.

Carcinoma in domestic animals, as in man, generally occurs in advanced age and not in youth, and when not removed by an early radical operation, which as in man cannot always be accomplished, finally leads to cachexia and death. Of course, as a rule, spontaneous death is not waited for, but the animal is killed before the tumor has had a chance to bring about the fatal issue.

Of the true etiology of carcinoma in domestic animals we know to-day no more than we know of the same condition in man. True enough, transplantation experiments in animals, provided they are confined to the same species, are frequently, though not always, successful; however, they have not given us any keener insight into the cause of this terrible affection for which in man as in animals, our only reliable weapon, up to date, is the surgeon's knife.

SPECIMENS EXHIBITED

1. Adenocarcinoma, kidney, horse (macroscopic).
2. Adenocarcinoma, kidney, horse (microscopic).
3. Carcinoma, sheath, horse.
4. Carcinoma, sublingual, gland, horse.
5. Cancer, penis, horse.
6. Cancer, penis, horse (epithelial pearls).
7. Flat endothelioma, pleura, horse.
8. Endothelioma, testicle, horse.
9. Carcinoma, vagina, cow.
10. Adenocarcinoma, lung, cattle.
11. Endothelioma, pericardium, cattle.
12. Adenocarcinoma, diaphragm, swine.
13. Adenocarcinoma, metastatic, lymph-gland, hog.
14. Adenoma, Meibomian glands, eyelid, hog.
15. Hypernephroma, sheep.
16. Hypernephroma, sheep, giant cells.
17. Hypernephroma, metastasis, lungs, dog.
18. Hypernephroma, fatty degeneration cells, dog.
19. Carcinoma, mucosa mouth, dog.
20. Adenocarcinoma (colloid), mammary gland, dog.
21. Carcinoma, ear, cat.
22. Adenocarcinoma (bone), mammary gland, cat.

THE PRESENT STATUS OF THE ETIOLOGY OF CANCER*

F. ROBERT ZEIT, M.D.
CHICAGO, ILL.

It is impossible within the narrow limits of a twenty-minutes paper to enter into a thorough discussion of the many hypotheses advanced to discuss the predisposing and exciting causes of cancer. The voluminous literature on the subject indicates that none of the various hypotheses advanced has been proved or the cause of cancer could probably be stated in a line. It is equally evident that successful prophylaxis can only be based on exact knowledge of the etiology of cancer.

In attempting to solve the problem morphologic and clinical methods have been exhausted, but without success. The experiment alone can give us further light. Innumerable attempts, based on the various etiologic theories advanced, have been made to produce cancer experimentally, practically without success. All kinds of stimuli and irritations have been employed without producing cancer. Displacement of normal tissues by transplantation fails to produce cancer.

Experimental study of cancer, although unsuccessful so far in determining the direct or exciting cause of the disease, has done much to clear away faulty etiologic hypotheses and show the promising paths of future experimental investigations. New experiments and methods to pry into the secret of the very cell itself must be thought out. Harrison's new and ingenious method is now being applied to a comparative study of living normal and cancer cells *in vitro* and promises within the near future the greatest advance in the experimental study of cancer.

The unsolved secret as to what makes an epithelial cell a cancer cell or a connective tissue cell a sarcoma cell may yet be disclosed. Are we asking the final question? Are we able experimentally to bring about in a normal cell a disturbance of its metabolism which gives rise to the biologic peculiarities of the cancer cell?

The epithelial cells, having assumed the biologic properties which transform them into cancer cells, represent the "overcells" of the organism, a new race of cells, the survival of the fittest, after a destructive process has disorganized normal tissue or cell groups. This new race of cells has exceptional powers of life and multiplication, at the primary origin of its production as well as at the secondary locations that it reaches by the lymph current. Destructive to its orderly cell neighbors, it lives and multiplies at their expense, monopolizing the nutritional elements of the tissues, where it grows lawlessly, without order and without system of its rapidly proliferating cell offspring. Its growth obeys no laws of organic union of cells, morphologically or functionally. The cancer enlarges only by multiplication of its own race of cells, which penetrate surrounding tissues, destroying its orderly epithelial cell neighbors, and using their stroma and their blood supply. Normal epithelial tissues invaded by

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cancer cells are destroyed without assuming the biologic characteristics of the invading race of cancer cells.

The current hypotheses on the etiology of cancer may be divided into three principal classes:

1. Parasitic theory: "Cancer is due to a living parasite."

2. Biologic theory: "Cancer is due to a biologic peculiarity of the cells."

3. Chemic theory: "Cancer is due to metabolic disturbances within the cell as a basis for the biologic peculiarities of cancer cells."

The parasitic theory finds but few supporters among pathologists because the nature of the metastases in cancer is a poor argument for a specific cancer parasite. In cancer the metastasis simply represents a growth of transplanted cancer cells, identical histologically with the cells of the primary tumor. The normal epithelium of the organ invaded by these cancer cells is destroyed and never reacts by proliferation. Secondary metastatic carcinomata of the liver show the histology of the primary cancer (stomach, pancreas, gall-bladder, uterus). The liver cells are destroyed and do not react by proliferation. They do not become cancer cells. In infectious processes a reaction of the fixed tissues takes place in response to the bacterial irritation.

None of the many so-called cancer parasites has been demonstrated to produce the atypical epithelial cell proliferation of cancer. Cultures of the various bacteria and blastomycetes obtained from ulcerating carcinomata produce at best only infection granulomata but not cancer, nor are these organisms constantly found in cancer. The same may be said of the recent findings of spirochetes in ulcerating cancers communicating directly or indirectly with the mouth.

Protozoa-like bodies are found within cancer cells at times. Many of these protozoan cancer parasites are in reality atypical mitoses or figures due to retrogade cell processes.

Certain other factors which seem to speak for the parasitic theory of cancer can be explained on other grounds. The statistical increase in the frequency of cancer in civilized countries and the relative infrequency in less civilized countries is only apparent. Improved methods of exact diagnosis, careful registration and the prolongation of life in general due to sanitation, cancer being a disease of advanced age, easily explain the apparent increase of cancer in civilized countries.

Coincidence could explain the cases of cancer *à deux* and *à trois* rather than a direct infection from person to person. A direct infection can certainly not be argued where different types of cancer occur in husband and wife. There is no evidence for direct infection in cancer. The few cases of self inoculation with cancer are all due to accidental implantations of cancer cells in other parts of the body of the same person affected with a primary cancer.

Extensive animal transplantations of series of malignant growths have disclosed many new and interesting facts but have not disclosed the etiology of cancer. Only secondary metastatic tumors are produced in

animals of the same species from transplanted primary growths and shed no new light on the question how the primary race of cancer cells originated because the nature and the possibility of metastasis in human cancers was already well known.

These transplanted rapidly growing animal tumors are of the nature of metastatic tumors only and bear the same relation to the primary growth as do the secondary metastatic human cancers to their primary carcinomatous neoplasm. They simply represent successful metastases of transplanted cancer cells.

To summarize the results of animal experimentation it is known:

1. That absolute failure accompanies any attempt to inoculate animals with malignant tumors from other than the same or nearly related species of animals.

2. The inoculation tumors may grow to such a size as to exceed the weight of the animal.

3. The tumor cells of the successfully transplanted tumors are descendants of the implanted cells and retain the characteristic histology of the primary growth for many generations, as shown by Loeb.

4. Transplantation can be carried on for many generations with increasing virulence.

5. Rapidity of the growth of these transplanted tumors cannot be influenced by mechanical or chemical stimuli.

6. Metastases do not occur; at least they are extremely rare.

7. In rare cases the transplanted carcinoma stroma may become sarcomatous.

Many biologic theories have been advanced on the basis that cancer is due to some biologic peculiarity of the cells.

Virchow's irritation or mechanical theory considers trauma or long-continued irritation as the cause of this change in the biologic peculiarity of the cells; but many cases of cancer give no history of trauma and long continued experimental irritation has always failed to produce cancer.

Cohnheim ascribes the biologic peculiarities of the cancer cell to displaced embryonal, supernumerary, unused cells. These fetal dormant cells are by some accessory cause stimulated to unlimited growth.

Ribbert modifies Cohnheim's theory by also including postnatal displacement of cells. A chronic irritation, in Virchow's sense, causes a displacement of cells from their normal organic connection, both embryonal and extra-uterine, at all ages of the individual, and the altered tissue resistance then gives rise to the atypical proliferation of the displaced cells.

Other biologic theories have been advanced to explain the nature of the cancer cells. Hansemann considers that certain cell races of abnormal properties and increased vegetative activity are produced by anaplasia. Bashford speaks of conjugation of cells, Hauser of new cell races favored by excessive nutrition, Ehrlich of cells with greater avidity.

Various chemic theories have been advanced to explain that the biologic properties of the cancer cell is due to disturbances of the cell

metabolism. Blumenthal has shown that an essential difference exists in the relation of proteids in cancer cells and normal epithelial cells. Cancer cells contain more albumins and less globulins. Cancer cells contain proteids which are absent in normal cells (alanin and glutaminic acid). Cancer cells behave differently toward ferments than normal cells, being more resistant to pepsin and hydrochloric acid and less resistant to trypsin than normal cells. All cells possess an autolytic ferment but cancer cells in addition possess a heterolytic ferment which is capable of dissolving other cells. It may be stated that these chemical differences are not primary changes but must be considered as secondary like the morphologic changes which take place in cancer cells.

Marchand holds that primary degenerative changes within the cell lead to faulty metabolism and that the products of the perverted cell have a toxic action on the cells of their neighborhood, weakening them and thus permitting unrestrained growth.

Oertel and Adami state that the chromatin of the nucleus of the cell is of two orders, one governing the functional activity of the cell, the other the proliferative or vegetative activity. Thus cell races may be developed in which functional activity is lost and vegetative activity is predominant.

All attempts, in the past, experimentally to prove any of the various hypotheses advanced, have failed. A comparative biologic study of normal and cancer cells *in vitro,* which has now become possible by the ingenious method of Harrison, promises the greatest advance in the near future in the experimental study of cancer, and startling results based on an application of this new method to the problem of the cancer cell have just been published by Carrel, Burrows, Lambert and Hanes.

Carrel and Burrows succeeded by Harrison's method in growing small fragments of adult tissue of dogs, cats and frogs in a plasmatic medium of the same animal, observing the growth of the cells microscopically at 37° C. in sealed hollow glass slides. By the same method they were able to cultivate and study the growth of sarcoma cells from a human case and from a very malignant sarcoma of fowl, producing subcultures from the latter. Cultivation of adult tissues and organs of mammals by subcultures are thus possible and afford a new method for the study of human cancer *in vitro,* enabling us to follow all the morphologic characteristic changes of the cancerous and other cells during life. They further found that the plasma of a sarcomatous animal acquires the property of inhibiting the growth of a sarcoma taken from another animal.

Volpino reports a culture *in vitro* of an adenocarcinoma of a mouse on semihardened horse serum medium.

Lambert and Hanes found that the plasma of normal young rats was as good a medium for culture of sarcomatous rat tumors as that of the tumor-bearing animal. Subcultures grew readily when transferred to new plasma. Prolongation of life of tumor cells is dependent on renewal of plasma medium. The plasma of immune animals does not prevent growth. No cytotoxic or cytolytic substances are present in the blood-serum of animals immune to cancer.

Immunity to tumor growth does not correspond, therefore, to any of the types of immunity produced by the reaction of the body to infective organisms and their products.

"Absence of a specific stroma reaction on the part of the host is the cause of the immunity, the implanted cells losing their power of calling forth a stroma reaction."

THE SURGICAL TREATMENT OF CANCER*

S. C. STREMMEL, M.D.
MACOMB, ILL.

In view of my subject, and twenty minutes for its presentation, this must necessarily be a general paper. After looking over a great deal of modern medical literature on this subject, I see it is impossible for me to express my opinions arrived at from my own personal experience without saying what has already been said and published before by a great many eminent gentlemen all over the world.

When we look at cancer as it is, see the life history of the different forms of the sarcomata and carcinomata, watch them from their incipiency to the end of their destructive processes, it does not require very deep thought or special intelligence to know what the right treatment is. The only cure for cancer known to-day is the surgical treatment, except in the most superficial epitheliomata where the *x*-ray in my opinion has come to stay. I have seen two cases of the superficial epitheliomata cured with caustic plasters; one is well six years and there is no sign of recurrence in the other, four years after the wound entirely healed. This form of treatment which is, in my opinion, one of the relics of antiquity, is still submitted to by people above the average intelligence.

Cancer in its beginning is always localized. If that is true (and it is), if every case could be detected in its first stage and the patients would consent to operation at once, there would be no deaths from cancer except in those cases where it is absolutely inaccessible. But, unfortunately, with very few exceptions, it cannot be diagnosticated with certainty in its incipiency. I have practiced medicine eleven years and surgery eleven years, and at the end of twenty-two years I am unable to make a positive diagnosis of cancer by palpation, clinical history or any other means prior to operation, unless a microscopical section is taken beforehand, a procedure seldom justifiable because a growth of any kind anywhere is a detriment to the patient and should be removed entire whenever possible, even in cases where the question comes up as to what kind of an operation shall be done—an extensive one which means the removal of all surrounding glands, or a simple one, merely removing the growth. When your examination is completed by a number of carefully prepared sections, the kernel which causes a recurrence may not have been detected. In view of the above facts it is imperative to advise the

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removal of every growth that can be safely removed as soon as it is discovered, even before it is possible to make a diagnosis, and in the chronic internal ailments which do not respond to medical treatment in the hands of competent men, exploratory operation should be advised. If this were done the number of deaths from cancer would be very materially lessened. Unfortunately, a great many patients with tumors and chronic, internal ailments do not consult a physician until in the last stages of the disease.

I have seen a number of cases of cancer, internal and external, in which the patient experienced no inconvenience until degenerative changes took place and infection followed, when in fact it existed for one or more years. In such cases no one is to blame and nothing can be done. The impression among the public generally is that cancer is excruciatingly painful; the fact is that many of them are painless, which frequently accounts for negligence on the part of the patient. This is especialy true in many cases of cancer of the breast. When I look over the literature of cancer of the breast and see the frightful mortality, I become more and more convinced that to advise the removal of every growth or lump in the breast that is not clearly inflammatory is of the utmost importance.

Our experience has been limited to twenty six cases operated on; six of them have died from recurrence, and most of the other cases are too recent to be of value in making any reliable statements. Statistics of value should include only those cases that have been under observation for ten years. One of the best reports I have been able to find was that made by Drs. Greenaugh, Simons and Barry, at the Massachusetts General Hospital. They kept track of 376 cases for eight years, and reported 20 per cent. of their cases cured. They are now doing more complete operations than at first, and will probably have a much higher percentage of cures in their cases since then. We always do the complete operation in every case by cleaning out thoroughly the axillary and subclavicular spaces, whether the glands are involved or not. It is the general opinion to-day that any operation that does less than this is unjustifiable. We do not do any particular surgeon's operation; we simply make a thorough operation and clean out the gland-bearing tissue. We never operate on the late cases; cases in which there is considerable metastasis. We leave those cases as glaring examples of negligence, of taking the advice of quacks and charlatans. What is true of cancer of the breast is true of cancer anywhere else. If you want to get the highest percentage of cures you must remove the lymphatic glands connecting, whether you think they are involved or not. The two greatest mistakes a surgeon can make are, first, a failure to make a complete operation; and second, to operate on inoperable cases. It is pitiful and mortifying to see these hopeless cases burdened with additional torture to their already sore affliction. Within the last two years three of the most eminent surgeons west of New York City operated on three of my patients that I considered inoperable; all three of these patients died from recurrence. In the minds of the general public and charlatans such work stands as an

insult to injury and stamps the fact in their minds that surgery cannot cure cancer. They point to our most eminent surgeons, and when we say, "Yes, surgery can cure cancer," we are met with the cynical smile of disbelief, and they refuse operation at a time when success would have been almost certain. It is the general opinion of the men who have investigated and made statistical reports that one out of every ten or twelve people who reach the age of 35 years or more die of cancer. It is also conceded and believed quite generally that cancer is on the increase. I believe with Bashford, who said he thought the increase was more apparent than real on account of more reliable statistics. I think it is due also to more thorough and more postoperative and post-mortem microscopic examinations of specimens. I know that since every tumor and specimen removed at the Marietta Phelps Hospital goes to the pathologist in the laboratory, a great many cases have been found to be cancer that before were classed as benign. I am glad to see that the men all over the country who are doing surgery and the medical men also are preparing themselves with modern facilities in the form of properly equipped laboratories with a good man who understands microscopic work in it. If this keeps up, and it will, it will not be many years until enormous statistics can be collected that will be as reliable and comprehensive as any compiled in any other country in the world, and the truth will be more nearly known. When we recognize the common occurrence of cancer, and know that the present mortality can be cut down at least one-half or three-fourths, it is fitting in a paper like this to appeal first to every teacher in every medical college to impress indelibly on the mind of every graduate before he leaves college the importance of early recognition or suspicion of cancer in every case of tumor formation or chronic, internal afflictions in which the diagnosis is not clear, and to advise the removal of every growth regardless of its kind as soon as discovered, provided, first, that the patient's general condition will permit; and second, to make the same appeal to every physician and surgeon practicing to-day, that everyone assist in educating the general public by explaining why so many people die from cancer and why they recur, and that surgery cures cancer practically every time if gotten early enough, provided it is located where it can be removed.

THE DIAGNOSIS OF ACUTE POLIOMYELITIS*

L. HARRISON METTLER, A.M., M.D.
Professor of Clinical Neurology in the College of Medicine of the University of Illinois
CHICAGO, ILL.

Notwithstanding the fact that the recent brilliant studies of Flexner, Lewis and others have classified and broadened somewhat our knowledge of the nature of infantile palsy, they have enhanced at the same time the difficulty of diagnosing it, and have opened a wide door for the making of many serious errors.

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It is the purpose of the present paper merely to warn of those difficulties and to suggest the possible lines along which the highest degree of accuracy in diagnosis may be attained.

At the outset let it be recognized that the experimental work so recently performed in the way of establishing the infectious nature of the disease has done nothing more than to confirm what has long been more than suspected on clinical grounds. Though the disease has been transmitted to the monkey and the virus has been carried through a series of twenty or more animals without apparently any diminution of its toxicity, we yet know very little, if anything, of the real nature and mode of action of the infectious material. The twenty odd thousand cases of the malady known to have occurred the last few years, epidemically and otherwise have taught us through their distribution, manner of onset and other general traits much more of the probable contagiousness of the trouble than have the laboratory investigations. It is the exception rather than the rule for more than one child in an immediate family to be attacked. Though Wickmann insists that even the sporadic cases of the Swedish epidemic could be traced to another case when sufficient care in the search was made, Hamilton says that no such success followed the most careful tracings of the disease in the Minnesota epidemic. It is pretty generally agreed that the disease may be carried from one locality to another by a healthy individual. Some experiments seem to point to the nasopharynx as the common threshold of entrance of the virus into the organism. There are other experiments, however, that indicate quite as strongly the gastro-intestinal mucous membrane. So, altogether, we have not advanced very greatly in our knowledge of the contagiousness of the disease or the mode of its conveyance.

As to the pathology of the disease, recent laboratory studies have done little more than to confirm what has been taught by many neurologists for a number of years past; namely, that the essential lesion is vascular and inflammatory, the degeneration of the ganglion cells being mere secondary results, and that the vascular process is not limited to the anterior horns of the cord, but involves more or less the whole cord, its surrounding membranes, the medullary nuclei and in a few instances even some of the cerebral structures.[1] Therefore, it is ignorance or thoughtlessness that prompts the statement lately made before one of the leading societies of the East, that so rapid has been the recent

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1. The cause of infantile palsy is, without doubt, some form of *infection*. This is shown by the course of the disease, the circumstances under which it usually occurs, its appearance with other forms of infectious nervous diseases like cerebrospinal meningitis and neuritis, and by the fact that it has been not infrequently observed to occur *epidemically*. Moreover, microorganisms have been introduced experimentally into the bodies of animals and alterations have occurred in the cord that simulated perfectly those of the disease under consideration. * * * Most remarkable and suggestive, however, are the *epidemics* of anterior poliomyelitis that have been reported. * * * The essential lesion in this disease is an *inflammation of vascular origin* in the *anterior gray horns of the spinal cord*, with subsequent *degeneration* and *disappearance of the ganglion cells and their processes*. * * * Most of the earlier examinations of Charcot and others were made in the later stages when the inflammation had long subsided and only the atrophic condition was in evidence, and explain their earlier teaching, now known to be erroneous, that the disease is primarily a parenchymatous inflammation of the ganglion cells of the anterior gray horns. * * * We now know that the disease process is *primarily a vascular inflammation with the atrophic changes occurring as secondary results*. * * * The work of Marie and Goldscheider, Redlich and Simerling seems to intimate that the process is primarily a *general inflammation* of the cord and that, while

progress of our knowledge in regard to this disease that the writers of five years ago are now largely out of date and the standard text-books do not naturally present the latest teachings; or, again, that "the text-books on acute poliomyelitis," written previous to 1907, "should be burned." In thus calling attention to the limitations of our knowledge of infantile paralysis, even at the present moment, when so much brilliant work is being done to solve its etiology and pathology, it is not intended in the least to belittle this work, but rather to check such misleading and unwarranted assertions as I have just quoted.

The one important fact—and one whose importance cannot be overestimated on account of its wide bearings—resulting from the recent studies of Flexner and others, is that the infection lying behind infantile palsy is real, uniform and transmissible. As in the case of other infections, like tuberculosis, syphilis, etc., the anatomical location of the various organic lesions produced by the infection is of much less importance than the toxic condition of the blood, the nature of the toxin and the effect of it on the organism as a whole.

Nosologically the term acute anterior poliomyelitis means very little as compared with some name still to be formulated, that will always indicate the infection as the name tuberculosis does for that particular disease. Other organs, besides the nervous system, are implicated in infantile palsy, showing that the disease is a far more generalized affair than is indicated in the name anterior poliomyelitis. This broader conception of the disease, including as it does a much needed change of name, represents an advance from mere symptomatic to physiopathologic medicine that we see going on in all parts of the clinical field.[2]

All honor therefore to the laboratory investigators who are laboring so untiringly and successfully to give us broader and more scientifically accurate conceptions of disease!

While, however, to the practical clinician the etiology and pathology of a disease are of the very greatest importance, the diagnostic signs, or indications of its presence, are of the most immediate significance. To him it is of somewhat less moment to discuss the deleterous influences to which any given patient may have been subjected or even to formulate a mental picture of the pathologic changes going on in that patient's organism than it is to recognize accurately the outward indications of those injurious influences and organic changes and their mutual

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the entire cross-section is involved, the maximum point of the trouble is located in the anterior horns. An *infection* is the origin of the inflammation. • • • In many cases the adjacent parts of the cord and meninges are softened and congested. • • • Alterations of this same character have been observed in the motor nuclei of the medulla oblongata. • • • When the disease is among the lower medullary nuclei it is known as inferior polioencephalitis; when among the upper, or nuclei of the motoroculi, it is spoken of as superior polioencephalitis (ophthalmoplegia). *Mettler, Diseases of the Nervous System, Cleveland Press.* Chicago, 1905, pp. 542-545.

In view of certain "cerebral cases" being included in Wickmann's accepted classification of the clinical types of epidemic poliomyelitis, it is interestng to recall that Strumpell believed that some forms of postnatal infantile hemiplegia and diplegia were "*dependent* upon a *polioencephalitis*, an affection analogous to and in the same general catagory as poliomyelitis." Mettler, loc. cit., p. 855.

2. Vide Mettler: The Newer Neurology, The Medical Fortnightly, May 25, 1906; Clinical Physiopathology; the Need of a New Classification of the Diseases of the Nervous System, Journal A. M. A., Feb. 23, 1907; Neurology, Clinical and Physiological, Clinical Review, December, 1907; The Relative Importance of Symptomatic and Physiological Diagnosis in Neurology, Archives of Diagnosis, January, 1908.

relationship. In other words he must know what the patient's disease is before he can profitably study its etiology and probable pathology and so institute general therapeutic and prophylactic measures.

This knowledge can be obtained only by a systematic contemplation of the symptoms, individually and in relation to one another, in connection with the disease in the patient under observation. Now the recent studies of acute poliomyelitis have helped us so far very little in this respect. In fact they have added to the difficulties of the diagnosis by including under the same types such as Landry's disease, meningeal, cerebral, neuritic and abortive forms. The laboratory has thus clouded the nice clinical picture which we have heretofore depended on for the diagnosis of infantile palsy without giving us as yet in return any definite criteria whereby we can positively recognize the presence of the specific, so to say poliomyelitic, virus in a classical case of acute anterior poliomyelitis or any of its congeners. Hence even after acknowledging that Landry's paralysis, certain forms of meningitis and multiple neuritis, and even some cases of cortical encephalitis, may all be due to the same agent that produces the classical form of acute anterior poliomyelitis, we are obliged to admit that these various clinical pictures are not necessarily always provoked by the same virus nor always the equivalent of acute anterior poliomyelitis. The old classical type of the disease so far outnumbers all of the others both epidemically and sporadically that, until further definite data for the detection *intra vitam* of the epidemic poliomyelitic virus is forthcoming, we will do well to hold to the long established description of the clinical manifestations of acute anterior poliomyelitis as the basis for diagnosis and to recognize that more or less in all cases and sometimes wholly in a single case the old classical picture of acute anterior poliomyelitis may be varied by the introduction of ascending paralytic, meningeal, cerebral, neuritic and abortive features.

Wickmann tabulates eight clinical types of the disease as follows:

1. Spinal poliomyelitis.
2. Ascending (including Landry's form).
3. Bulbar or pontal (involving the cranial nerves with or without involvement of the extremities).
4. Cerebral or encephalitic.
5. Ataxic.
6. Polyneuritic.
7. Meningitic.
8. Abortive.

As in every *generalized infection* involving the nervous system the clinical exhibitions of infantile palsy separate themselves into two fairly well-defined groups. The earlier group is that of a general toxemia; the later group consists of the localization signs. The first group being general and toxemic, concerns especially the primary functions of the organisms; it is characterized by disturbances of the temperature, pulse, respiration, bowels and other vegetative functions of the body. These symptoms differ in no respect from those of any other form of infection, hence they are of no assistance in making a diagnosis. To fully realize this, one needs only to glance at the following tabulation made by

Lovett of Boston in the 147 cases of infantile paralysis collected by him from Massachusetts in 1909: fever, 132; pain, 110; tenderness, 108; vomiting, 67; constipation, 72; retraction of head, 60; diarrhea, 38; headache, 33; delirium, 15; anorexia, 15; irritability, 24; stupor and restlessness, 14; malaria, 9; nausea, 18; convulsions, 45; twitchings, 3; cough, 8; dyspnea, 4; sore throat, 8; numbness, 3; chills, 2; weakness, 1; coma, 2; abdominal distention, 7; pain in the abdomen, 1; jaundice, 1; vertigo, 2; double vision, 2; difficulty or irritability in swallowing, 4; difficulty in articulation, 2; gastro-intestinal upset, 2; diaphragmatic breathing, 1; coryza, 1; skin eruption, 6. This is surely a formidable list, but without value as a means of diagnosing infantile palsy. If the laboratory does not come to our assistance and furnish us with some specific means of detecting the infection that we now believe causes this disease, and we have none but these symptoms to go by, we will be worse off in diagnosing infantile palsy than in diagnosing the ordinary exanthemata of childhood.

On the other hand it needs to be reiterated that this being the weak point in the recognition of acute infantile palsy and the infection being now recognized as being the most important feature of the trouble, the physician by the same token should be doubly alert in the presence of these very indefinite symptoms. Though the disease is known to occur at any age, it attacks so much more frequently children that when a child complains at the end of an uneventful day of headache with a little stiffness at the back of the neck, with possibly a mild irritation of the upper air passage resembling a coryza or bronchitis, and especially with a sudden rise of temperature and pulse rate together with restlessness, irritability, anorexia, nausea, vomiting, tendency to delirium and convulsions, accompanied by profuse sweating, with marked hyperesthesia and sensitiveness to movement, a lively suspicion should be awakened at once of the possibility of acute poliomyelitis.

It is a very simple matter, but one that is useless, to take a retrospect after a case has sufficiently developed to be positively diagnosed on other grounds as infantile paralysis, and to dub as prodromata such manifestations as indefinite general malaise, slight headache with one or two seizures of vomiting, constipated or loose bowels, indefinite gastro-intestinal disturbances. So far as this affection is concerned such symptoms tell nothing, and are of very little more value as such alleged manifestations as pain and tenderness in one or other of the extremities, resembling intense, shifting, rheumatic-like distress in the joints. The same is to be said of the stupor, the cardiac and respiratory irregularities, the involvement of the rectal and vesical sphincters and the signs of a more or less acute nephritis. They may or may not be present. Writers may go on forever filling their pages with elaborate descriptions of these early manifestations of the general infection, but the practitioner, when face to face with a case, knows only too well how desirable it would be to have at this time at least one characteristic symptom whereon he might at least make a tentative diagnosis. In connection with the Minnesota epidemic Hamilton says that "the clinical signs seen in these epidemics

differed greatly from what are ordinarily looked on as the symptoms of poliomyelitis. In most of the cases without the knowledge that the epidemic was at hand it would have been quite impossible to make the diagnosis before the occurrence of paralysis. In some of the cases the symptoms were very peculiar indeed and at the outset suggested almost anything rather than poliomyelitis."[3]

We are told that Lucas has noted a fairly constant lymphocytosis running up to 40 per cent., this being coincident with a fall in the total number of white cells. About this time also there is often observed an increase in the number of cellular elements of the large mononuclear type in the cerebrospinal fluid. Polymorphonuclear cells reappear in the later stages of the disease. Unfortunately, none of these findings are characteristic enough to establish a diagnosis on.

Not until the localization signs, the second group of symptoms, reveal themselves and are recognized through the peculiar characteristics of the paralysis as shown by a thorough analysis of it along well recognized physiologic lines can a positive differentiation of acute poliomyelitis be formulated. Here is where a physiologic diagnosis shows its immense superiority over a mere symptomatic text-book diagnosis, as I have pointed out in detail elsewhere. Indeed, unless physiologic guides be rigidly followed, all sorts of infective processes that reveal themselves through the nervous system are going to be mistaken for acute poliomyelitis and its congeners. This is already beginning to be apparent in general practice, the awakened interest in acute anterior poliomyelitis, accompanied by inadequate knowledge of the anatomy and physiology of the nervous system, especially in its more recent aspects, leading to the diagnosis of this disease in many instances where it does not exist.

The *motor paralysis*, the only symptom to which that much abused term pathognomonic may with any sort of justice be applied, is dominantly of the lower neurone type. This means that it has certain characteristics which distinguish it from all other kinds of palsy. A few cases have been reported in the recent epidemics, in which the paralytic manifestations seemed to point to an involvement of the upper neurones. In these there was a tendency to spasticity with exaggeration of the reflexes. But as these cases were comparatively few in number and as in most of them this peculiar type of paralysis occurred so early in the disease, they may be passed as exceptions to the rule. We may account for most of them on the general basis that they are somehow the results, more or less permanent, of the initial meningitis and general myelitis that appear in nearly all cases of acute poliomyelitis. Notwithstanding the fact that we have at last recognized the disease acute anterior poliomyelitis as one of a general vascular character, with an incipient pathology involving the meninges, cord, brain and medulla, the seemingly selective action of the infection is sooner or later made known by the brunt of the damage falling upon the neurones of the lower motor segment.

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3. Hamilton: Epidemic Anterior Poliomyelitis, The Northern Lancet, Oct. 1, 1900.

Recalling for a moment the physiology of the lower motor neurones—those neurones whose cell-bodies lie embedded in the anterior horns and medullary nuclei of the cerebrospinal axis and whose axones pass out by way of the anterior spinal roots and motor constituents of the various cranial nerves to terminate in individual muscles—it will be readily understood how these neurones, when damaged, produce *functional inability* and *wasting* in the muscular part of the neuromuscular apparatus. In the beginning of acute poliomyelitis this functional inactivity of the muscles is rendered so extensive by the edema and extravasation in and around the gray matter of the cord. As the latter subside, however, some of the neurones obviously recover their functional integrity, while others remain permanently damaged. This explains the first great characteristic of the dominant form of paralysis in this disease, helping to differentiate it from other forms of paralysis. *The paralysis attacks individual muscles and is followed by a marked atrophy of those same muscles.* Sometimes death occurs before the appearance of the atrophy, as when the disease is of the Landry type or so-called rapidly ascending type, or when it attacks some of the medullary nuclei involving the cardiac and respiratory functions. Yet even in these fulminant cases the characteristic picking out of individual muscles is more or less noticeable. Cerebral and neuritic palsies do not exhibit this peculiarity because the cortical neurones do not control muscles, but movements in which a number of muscles work more or less co-ordinately together and because the peripheral nerves are each more or less connected with several muscles.

Again, in acute poliomyelitis the very nature of the lesion, vascular and inflammatory, accounts not only for the remarkable recession of the paralysis from its initial wide distribution, but it also makes plain why ultimately it remains scattered in such a bizarre way about the body, as, for example, the thigh of one leg and the arm of the opposite side.

And finally, the lower motor neurones with their related muscles being looked upon as integral physiologic units, it is easy to comprehend how, when the neural end of this neuromuscular apparatus is damaged, the paralysis is of the flaccid sort, the muscles are wasted, the associated reflexes are diminished or lost, the electrical changes are clear and positive and the objective sensory manifestations remain normal. The terminal deformities and contractures result as a matter of course from the disproportionate activity between antagonistic damaged and undamaged muscles. Such is the clinical picture, unique, clear and pronounced, of the dominant type of acute poliomyelitis.

Much space might here be consumed in naming the different muscles and the many combinations that may be implicated in different cases and a long essay might be written in describing the possible deformities and atrophic appearances that the patient shows. Every muscle of the body is liable to the disease, but the manner of the implication is the same in all. Hence in the making of the diagnosis it is of less importance

to note *what* muscles are affected than it is to observe *how* they are affected, and how they individually respond to certain accredited tests.

A few years ago I wrote, "There are no sensory symptoms that belong to this disease. Sometimes in the beginning there are dull pains of a rheumatoid character in the muscles. If these pains become severe or the muscles are unusually tender on pressure, there is probably some degree of peripheral neuritis with the poliomyelitis." The statement is true to-day, excepting that as the emphasis is now laid on the infection as the disease and not merely on its objective clinical manifestations, we attribute these sensory disturbances to the meningitis and neuritis that are provoked by the same agent that sets up the anterior cornual inflammation. In like manner some of the cerebral and neuritic palsies that were wont to be regarded as rare complications of acute anterior poliomyelitis are now admitted as possible manifestations of the latter disease because it is believed upon much laboratory evidence that the same microorganism is the primary cause of all forms. And to-day it is not of such great consequence whether we call the case spastic cerebral palsy, flaccid spinal palsy, neuritic palsy, or even meningitis, so long as we recognize that behind them all lurks the same specific poison, the infection that we now identify with the classical acute anterior poliomyelitis. And yet we venture to suggest that, notwithstanding this fact, the lower motor neurone type of paralysis, the flaccid spinal type, is so dominant and so far outnumbers all other types in epidemic infantile palsy that for the present we may still cling to the classical picture of acute anterior poliomyelitis as representing more or less typically the clinical presentation of the malady.

A few clinical differentiations, though less sharp than we were wont to hold them, before we had adopted the infection lying behind acute poliomyelitis as the real disease, may still be profitably remembered.

In *hemorrhage of the cord* and *acute myelitis* there are very prominent sensory symptoms as a rule. The reflexes are exaggerated (except when the damage is in the lumbar region.) The sphincters are decidedly involved and bed-sores tend to appear early. Paraplegia is the typical form of paralysis. Hemorrhage, of course, is sudden and does not occur often without trauma. Myelitis is slower in its onset and longer in duration. Its paralysis does not recede as in acute poliomyelitis and remain permanently in particular muscles. In this connection, however, it must not be forgotten that the earliest symptoms of infantile palsy are quite indicative of a transverse myelitis even to the weakening of the sphincters.

A point well noted by Oppenheim is that *acute rachitis, coxitis* and *osteomyelitis* are all to be distinguished from the early stage of poliomyelitis by the resistance which the child offers in the former when passive movement is attempted. The little patient contracts and holds his muscles in a state of rigidity to avoid the pain of movement in the former, while in the latter he merely complains of the pain.

Syphilitic pseudoparalysis can now be established diagnostically by a blood test. Moreover, there are other marked indications of the specific infection beside the character and distribution of its paralyses.

Epidemic cerebral palsy is sufficiently infrequent to warrant an attempt at a differential diagnosis between it as a mere phase of epidemic acute poliomyelitis and the ordinary type. The latter comes on more abruptly as a rule, is more distinctly hemiplegic in character and distribution, and is accompanied by a positive rigidity and exaltation of the reflexes. There is mental depression of a profound sort, and stupor, while a series of facial or Jacksonian convulsions may occur. Of course, all of these manifestations may be seen in a rare case of epidemic poliomyelitis because it is now acknowledged that the same infection attacks the brain that produces the spinal form of the palsy. And yet in the epidemic disease, even when of the cerebral type, the paralysis will sometimes appear in this or that muscle to indicate that the lower motor neurone has been attacked along with the cortical neurone, thus demonstrating that the trouble is not so definitely hemiplegic in character and distribution. In other words, the ordinary cerebral palsies are more or less decidedly and only cerebral in their clinical appearances, whereas the epidemic cerebral palsies have associated with them some evidence of spinal or neuritic involvement also. The pathogenesis of epidemic infantile palsy, even of the cerebral type, is a much more diffuse process than is that which lies behind the ordinary cerebral palsies.

The so-called *birth palsies*, though liable to cause some confusion by reason of the paralysis being of the flaccid degenerative type, can usually be differentiated on the ground that they occur only in the arm and are plainly more or less the result of trauma.

Progressive muscular atrophy rarely occurs in children. Furthermore, it is very gradual in its onset, slow and steady in its march and is devoid of all febrile and sensory phenomena.

Peripheral neuritis, and especially *multiple neuritis*, are exceedingly rare in childhood. Their onset is gradual and they are marked by pain and tenderness with slight or no febrile movement. When fever is present it lasts longer than the fever of poliomyelitis. There is a history of trauma, of metallic intoxication, of syphilis or general cachexia. The paralysis is slower in coming on than in poliomyelitis, and it assumes more of the bilateral type in multiple neuritis and of the monoplegic type in simple neuritis. The atrophy is not quite so pronounced and it is more tardy in appearing than it is in the spinal trouble. Moreover, there is not the same implication of the skin and nails in the poliomyelitis and the latter is not accompanied by such vasomotor disturbances as edema. And yet it must be frankly admitted that often the etiology alone distinguishes for the practitioner acute anterior poliomyelitis from general neuritis and that when both sets of symptoms happen to depend upon the same infectious agent, the differentiation clinically between the two maladies becomes almost impossible.

MEDICAL SERVICE OF THE STATE HOSPITALS *

CHARLES F. READ, M.D.,
Assistant Superintendent Watertown State Hospital
WATERTOWN, ILL.

In presenting this subject, the writer is in part very possibly actuated by a mild resentment of the imputation that the physician in the state service is there because he wants an easy berth, or has not the initiative to secure success in general practice. Aside from this desire, however, he is anxious to impress upon the profession of the state the fact that your institutions for the insane have truly become hospitals—because in them your mentally sick are being cared for in a scientific way—not ideally, I grant, but creditably at least.

Not five years ago the medical service of our state hospitals was still in the grip of the custodial idea. The patient was committed to its care and it kept him. A few meager notes were recorded from time to time to supplement an initial history that was about as exhaustive a study of his aberration as the comments of the sheriff who brought him. For example: In one institution there are hundreds of case records in the form of very small leaflets bearing a few "yeses" and "noes" on each of their four or five blank-form pages, with perhaps a brief notation at the close—to justify the diagnosis—stating that the patient "believes his bowels are destroyed and refuses to eat," or that he "sees devils but does not seem to fear them." Those who wrote these histories doubtless knew much more about their patients than they told, but their records are almost valueless.

In contrast to this, I regret that I cannot exhibit an average case history of the present day, with its carefully recorded inquiries into physical and mental conditions, covering in all from a dozen to three dozen large, typewritten sheets and closing with a verbatim report of the discussion of the case when presented before the staff, often supplemented by sleep and temperature charts, and always by more or less detailed progress notes added as frequently as seems necessary. Even the value of such histories naturally varies with the insight and care of the examiner, but comparatively few escape containing enough facts to be of great value in the event of subsequent interesting developments, and many go far beyond this minimum. Permit me to say something about the making of these records.

Upon the physical examination, I will not dilate. It extends from the crown of the head to the sole of the feet, may include pulse tracings, blood pressure estimations, examinations of the ocular fundi, body fluids, etc.. and is completed by a painstaking neurological investigation. Spinal puncture has become a matter of routine in two or three of our hospitals—routine, that is, in suspected cases—and is carried out at times in nearly all institutions. A painstaking report of some fifty cases investigated at Kankakee was pubished the first of this year. With

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the aid of this procedure, we are accomplishing some surprising results in the matter of diagnosis. To say of the case with doubtful findings, "I *believe* this to be paresis," brings into the diagnosis a very personal and always to be distrusted factor; but the report of a positive Noguchi, together with an increased lymphocyte count, at once assures us that we are dealing at least with an organic case if not with paresis itself.

The mental examination as we now understand it begins not with the patient, but with his progenitors, tracing back as many generations as possible, and not only taking into account the existence of actual insanity, epilepsy, alcoholism and imbecility, but also the presence of neuralgias, tics, fugues, fears, chorea, oddities, etc. Following this, the patient's life history from early childhood on is obtained from the relatives, with a view to determining what manner of man has become involved in difficulties arising out of a lack of proper reaction to stress and strain. Of course we are as yet far from satisfied with our results along this line. Too much of the work is perfunctory and hurried; but we are traveling in the right direction, having ceased to look upon a psychosis as a meteor from out a clear sky. Especially is this true of dementia præcox—that strange assemblage of symptoms ordinarily eventuating in a dementia that fills the benches of our chronic wards. The general practitioner should become especially familiar with this type of insanity, because he is the first to see the early cases—those odd, seclusive boys and girls whose "shut in personality" seems to be the chosen breeding ground for so much of this disorder. We need his intelligent assistance in making complete records of such cases, and more than this, we need it in prophylactic effort.

Turning to the patient himself, a study is first made of his reaction to the hospital environment, the value of which observations often depends upon the proper interpretation of a single act or a half dozen words; also we have him talk freely to us, and from the character of his mental stream thus displayed, inferences are drawn *and recorded* concerning the nature of his associative processes, coherency, mode of expression, general content of thought, etc. Following this inquiry, the emotional state is considered. Is there a predominating mood, and if so, what is it? Is our patient *adequate*, that is, does he react in a normal and consistent, even though exaggerated manner, or is his conduct out of accord with discoverable stimuli—actual, delusional, or hallucinatory. Much in the way of diagnosis, prognosis and treatment here depends upon a judgment which gives opportunity for keen discernment founded upon a knowledge of psychology and the possession of a sympathy broad enough to permit a full searching out of the wellsprings of human conduct.

Of the study of hallucinatory and delusional experiences there is almost no end in an accessible case presenting these phenomena. Hallucinations and delusions of themselves are of no more interest than a fairy story, and a diagnosis based on their general type is little better than a guess. What interests us nowadays is the inner struggle, the suppressions and concessions which have eventuated in those products

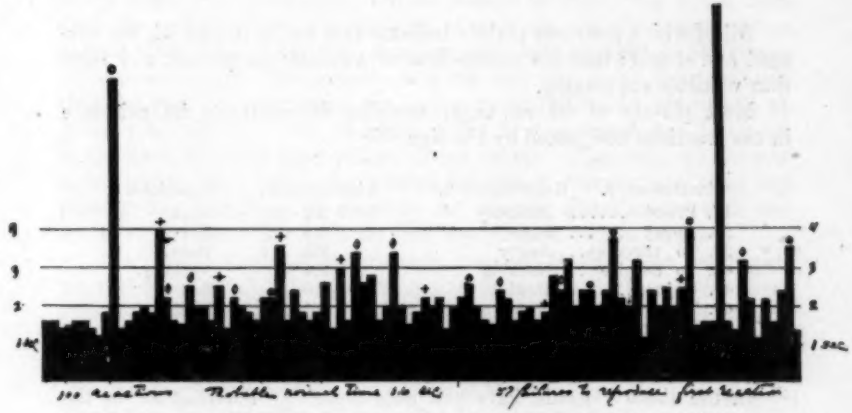
called hysterical symptoms, phobias, obsessions, hallucinations and delusions.

For instance, a patient tells me of quickly fading vision, that of a headless male figure. Questioning brings out the fact that this occurred while she was taking a bath, and that although the head was missing, she recognized the man as one with whom she had once had an illicit relationship. Already you see we are in possession of facts that point to a certain kind of interest in this patient which, when followed up, leads ultimately to an understanding of the mechanism of the aberration. During the past year we have heard much of psycho-analysis. By some it is misunderstood and derided, by others over-estimated and unduly praised, but by the majority I believe it has been accepted (with reservations), and in the state hospitals its spirit of careful inquiry has certainly effected and is effecting a great change in the methods of case study. Even though our work is more or less hasty and superficial according to Freudian standards, still we are coming to look behind the symptom for a cause, for the presence in the ego of disturbing factors termed complexes—trends of interest that have become more or less dissociated by reason of their incompatibility with life as the individual must live it, but which continue a certain independent existence of their own, and in a subject predisposed by heredity, education and environment finally attain an ascendancy which permits them to thrust themselves to the fore in the manifestations of a psychosis.

It is not my intention here to enter further into the matter of psychoanalysis than to illustrate very briefly one of the procedures on which we rely for the detection of these more or less concealed sources of irritation. Briefly stated, the value of this procedure—*the word-association test*—rests on the fact that the reaction to the different stimuli contained in a list of 100 words varies according to the emotions aroused, which emotions are the feelings concerned in various unfulfilled desires, desires which have in one way or another been thwarted by the necessities of environment and personal ability. When a word arouses memories with a strong emotional coloring, the subject, although he has been asked to respond immediately with the first word that comes to his mind, is blocked in this endeavor—he is, as we would commonly say, "embarrassed" for a moment, and when he does react we know by the unusual delay and often by the character of the reaction word, that we have touched him in a tender spot.

I have not time to consider the philosophy of the procedure, but in illustration of it, I would call brief attention to a case observed a short time ago, that of a young woman of 28, unmarried, who complains of insomnia and has suffered more or less headache for several years. Of late she has been worse, tires easily, and in the back of the neck has a sensation as if everything she had ever thought had settled there. She is conscious of an inability to think things out clearly, and letter writing makes her nervous. At times she states that she has severe pain in the right side, and "fearful pains" trouble her at times in one side of the neck running to the shoulder so she cannot use the arm. She suffers

from dysmenorrhea and dreads social gatherings. She is not insane, but psycho-neurotic. The chart I show you here is a diagram of her reaction times, the length being indicated by the height of the various columns. Her normal reaction time to indifferent words is about 1.6 seconds. You will observe the seconds are indicated by the heavy horizontal lines. Certain words have evidently called up associations having a marked emotional coloring, as evidenced by the increased length of the reaction time, and also (what I could not show upon the chart) by the nature of their reaction words and by her failure to give the same ones again when the list was gone through with the second time—which failures amounted to 57 per cent. in place of the 20 per cent. commonly found in a normal individual.



By means of different symbols I have very roughly blocked out three complexes or trends of interest evidenced in this test. Of course many other reactions not indicated are also involved. For instance, there is the group designated by the symbol O—and note here, please, the following reactions:

Stimulus-word.	Reaction-word.	Time-seconds.	Repetition.
10. Friendly	Face	8.0	Good
57. To meet	Friend	2.6	Somebody
73. Family	Friends	2.4	Love
76. Stranger	Man	3.8	Friend
86. To kiss	Baby	5.0	Friend
99. Carriage	Wicker	3.6	Baby

Observe the frequent use of the word *friend*, which, when finally given the fourth time in reaction to the word *kiss*, we have good reason to believe cloaks the thought of a lover—as it is so often used in ordinary life. And to strengthen this conclusion, we find on inquiry that the baby thought of in the first reaction to the stimulus word *kiss* is not any one of the three baby nieces and nephews of the patient, but the child of a man in whom she once took a romantic interest, and whose wife she called on shortly after the birth of this child. This same

reaction takes place when to the word *carriage* she reacts first with the word *wicker* and on repetition with the word *baby*. From all of these reactions it is fairly easy to read that she is craving a lover, a home and a child.

Again, note the reactions indicated by the symbol +, where we find her responding as follows:

Stimulus-word.	Reaction-word.	Time-seconds.	Repetition.
16. Sick	Ache	4.0	Bad
24. Blue	Pencil	2.5	Color
32. Yellow	Green	3.6	Blue
40. Stupid	Ignorant	3.0	Bright
51. White	Black	2.2	Black
85. Anxiety	Everything	2.5	Wrinkles

All of which reactions plainly indicate that she is feeling ill, discouraged and stupid; that she is conscious of a fading complexion and fears that wrinkles are coming.

Most plainly of all an anger complex demonstrates its existence in the reactions designated by the sign <>

Stimulus-word.	Reaction-word.	Time-seconds.	Repetition.
17. Proud	Haughty	2.2	High
20. Angry	Face	2.5	Horrid
26. To threaten..	Angry	2.2	Menace
42. To despise ..	Nothing	3.4	Nothing
47. Unjust	Unkind	3.4	Bad
61. To quarrel...	Hate	2.4	Dislike
69. To strike....	Ball	2.3	Something
93. Scorn	Friend	3.2	Wry

In the above I would have you note especially the reaction to the word *strike*, which, though a normal one to a tennis player (which she is), is much delayed and not repeated—two complex indicators. In connection with this it is interesting to note that when asked concerning her dreams she responded that many of them concerned misunderstandings with her mother, and in one of them she very nearly killed her mother by striking her with a chair. When she was asked to discuss her various reactions after the test was completed, it was revealed that the apparent cause of an anger complex lay in her strained relations with her mother, which difficulty, I believe, though I have not been able to carry out a complete analysis, takes its origin in some childhood jealousy concerning her father, with whom she even now conducts herself in a manner suggestive of a girl with her lover.

I am fully aware that this superficial study leads nowhere in particular—the object of it is not to instruct, but merely to illustrate in part the manner in which we are endeavoring to conduct our psychologic inquiries.

Dream analysis is made use of to a certain extent in our work, but necessarily in a superficial way, owing to lack of time and familiarity with the technic. However, in many cases it has aided us in arriving at the source of irritation and we are able to make some rough use of its

principles in the analysis of the dream states and fancies of dementia præcox.

An ordinary examination closed with an investigation of the patient's orientation, memory, general and school knowledge, etc. Often it requires long inquiry to determine whether or not there is present actual dementia, a lack of mental development, or merely defect of attention.

Although with this inquiry the formal history is complete, it is only after many weeks or months and in comparatively few cases that we are able to secure the ideal result—a fairly complete understanding of the mechanism of the aberration. We are endeavoring to re-educate during analysis, but the results thus far have been rather discouraging. A few cases seem to improve, but we cannot be sure—they might have done the same without any attempt at analysis. A short time ago a patient with whom I had been working some time to discover the origin of various somatic disturbances told me one day quite spontaneously that she had discovered why she had a queer feeling in her mouth at times. An old-time lover, it seems, when he had kissed her, had been in the habit of putting his tongue in her mouth. Naturally she did not enjoy telling this, but I was pleased because it demonstrated that my patient was beginning to associate her bizarre disturbances with her actual experience—that is to say, her re-education was in progress.

The psychic study of our patients, however, though most important, we realize does not measure our entire duty toward them. We must endeavor to co-ordinate with this a more thorough study of the psychic basis of mental abnormalities. Psychiatry suffers for the lack of pathology—save in the so-called organic dementias, and even here there is still much work to be done—and to this end the state has equipped at Kankakee, in connection with the Psychopathic Institute, a most excellent laboratory for research work. Along psychiatric lines the institute has performed a great service for the state in training physicians in proper methods of psychologic study, but in the way of pathology comparatively little has yet been accomplished owing to the fact that the Board of Administration has not been able to furnish salaries for skilled workers. However, the future in this direction is bright. Efficient laboratory men are to be put to work this summer and the institute is soon to enter upon a still greater field of usefulness.

Each institution has its own laboratory where the various measures incident to physical diagnosis are carried out. For instance, our pathologist at Watertown has of late twice found the meningococcus in suspected cases. A short time ago he showed me a slide swarming with spirochetæ and soon after obtained a positive Wassermann with this same patient's blood. Two of our hospitals are doing their own Wassermanns and another reports that it is about to take up this work. Post mortems are not so frequent as they should be, although Elgin reports autopsies in 45 per cent. of its deaths, and Peoria in 40 per cent.—a remarkably good showing for these institutions. It is a strange fact that people who have not visited their insane relatives for years should

so oppose autopsy and be so insistent upon immediate funeral arrangements as soon as death intervenes. In spite of this, however, courteous persistence many times wins consent where we have least expected it.

The sick service of an institution of from 1,600 to 2,600 patients provides material enough to prevent a man from growing rusty in general medicine, and more and more attention is being paid to this branch of the service, which is now so excellently housed in a number of our institutions—and I must confess not so well cared for in others. In the writer's institution within a few months we have, among other cases, cared for pneumonia, toxic nephritis, tubercular arthritis, osteomyelitis, syphilis and gonorrhea, acute articular rheumatism, pernicious anemia, cerebral tumor, urethral stricture (with operation), cerebrospinal meningitis, carcinoma, etc.

For the graduate who fails to secure an internship in a good general hospital or upon whom it is incumbent to earn a little money, the state service furnishes an excellent opportunity. We need interns badly and stand ready to pay them $50 a month and to instruct them not only in physical but also in mental diagnosis. Should they desire to remain in the service, promotion by examination leads through the grades of assistant physician and physician to that of assistant superintendent. Unfortunately for us, however, the graduate too often longs to become a surgeon and herein the service is weak. We are hampered by a public that either suspects some ulterior motive when operation is recommended, or rests supine in the thought that it is of no use to interfere, since the patient will still remain insane after all is said and done. Also we are hampered by our own lack of surgical practice. The most of us feel that as specialists in another line we are not fitted to take upon ourselves the responsibility of major surgery. As a result of all this, the writer feels that the patient quite often suffers, and suggests as a partial remedy, at least, the appointment of a consulting staff from the vicinity of each institution, in whose word the relatives of our wards may perhaps find it easier to trust than in the unsupported statements of the hospital staff.

After attempting this brief and inadequate description of the activities of the state service, I had thought to speak of its ideals—but time forbids this. We have them in the service, these ideals, and to the most of us they are of serious moment. We want to make realities of our dreams and to this end we require more physicians, more money and a larger nursing force. Already we are giving our acute patients a degree of personal attention unrivaled in the past; but we look forward to still better things. Acute insanity is a very personal affair and is best treated by personal study and individual nursing. Eventually we hope to accomplish this more intensive care and as a result of it the public, the patient and the alienist will reap a far greater reward than now seems possible.

DISCUSSION

Dr. L. C. Taylor, Springfield: Owing to the absence of Dr. Norbury, who was to have opened the discussion on this subject, I would like to consume two or

three minutes of the time of the society in making a few remarks in his place. I am not in any sense of the word capable of discussing this subject as thoroughly as Dr. Norbury would do, although as his successor on the Civil Service Board of the state, I became somewhat familiar with the work of the medical staff of the hospitals. I want to say that I appreciate very much Dr. Read's remarks, and also wish to state that there has been a great deal done in the last few years since the adoption of the Civil Service Law in regard to the state institutions. A few years ago the asylums were looked on as custodial, and the treatment of mental conditions was hardly entered on at all in our state institutions. The establishment of the Psychopathic Hospital at Kankakee, which occurred a short time ago, and the building of a magnificent hospital for the insane sick, has given a great impetus to scientific investigation in our institutions. I think, however, much has been contributed by the promotional examinations which have been inaugurated, and any one entering as an intern feels that he has not only the prospect of promotion, but additional compensation for the time he devotes to his work, and this has given encouragement to applications for membership on the staffs of these institutions. I will say that the author of this paper, who is too modest to make the statement himself, is a product of promotional examinations and he, like others who have been advanced, has an incentive for work, and has made that advancement on account of the fact that he has done a little more work than was formerly demanded from interns or from physicians in our state institutions. The establishment of this psychopathic hospital has given the interns and physicians throughout the state an opportunity of going to the institution and studying not only psychiatry under experienced teachers, but also pathologic conditions, and I am confident that the encouragement the men working in the state hospitals have received owing to the fact that they can be promoted by competitive examinations, has done much to improve the service.

Dr. Read speaks of one point that is absolutely urgent, and when the people of the State of Illinois are thoroughly aroused to this fact, I think they will insist on additional appropriations for the establishment of other state hospitals. We have heard the reports from different institutions, and are obliged to say that nearly all of them are overcrowded with patients on account of the fact that there are inmates in a number of the hospitals who have been compelled to sleep on the floors.

In the report I expect to make to-morrow there is reference to a measure for building another state institution. I am afraid it is not going to become a law (law since passed), although a great many members favor this proposition, but the people are a little reluctant to increase the tax rate of Illinois, and that is the only way we will get adequate care for the insane.

I am confident the new regime in the state institutions is here to stay, and I am heartily in accord with what Dr. Read has said, in stating that there are not sufficient assistants or physicians in the state institutions to give adequate attention to the unfortunate patients.

Dr. Hugh T. Patrick, Chicago: I feel that I ought to say just a word or two along this line, because we are all grateful to Dr. Read for his paper and to Dr. Taylor for still furthering the discussion.

First of all, I should like to render justice a little farther back. I think Dr. Read stated that the renaissance in our state institutions began about five years ago. As a matter of fact, it began fifteen or sixteen years ago when, under the leadership of the then president of the State Board of Charities, Dr. Boerne Bettman, a member of this society and a valuable one, the first examination was held for interns of the state institutions. Some of the best men in the state service since then, and some of the best men in the country to-day came from the first lot of interns who were examined by our committee at that time. We received support, too, of the then governor, Mr. Altgeld, who, like other men, had his faults, but to whom we must render credit for supporting us in the scientific care of the insane of the state. Interns received appointments from our committee and were sent to the various superintendents. Some of the

superintendents sent them back, saying that they had no places for interns. Governor Altgeld spoke the necessary word, and lo! and behold! rooms were found. A little later a systematic attempt was made to formulate proper examinations and investigations of the cases. In one of the institutions there were consultants, and in the same one systematic attempts were made to deliver lectures to the resident staff and to instruct them in the technic of examinations. So you see considerable interest in scientific work was manifested a considerable time ago. It is for the medical profession and for the public at large to keep on sowing the seed and to keep on holding up the hands of men like Dr. Billings, who was President of the State Board of Charities when the state psychopathic institute was established, and like Governor Deneen, who backed up Dr. Billings in his demand for increased funds and improvement in the public service of the insane hospitals. I say, it is for us to uphold the hands of those doing this good work whenever we can. It is given to every doctor in the state to help in one way by establishing confidence in the minds of the people in our state institutions to help wipe out the prejudice against them, the horror about them, and the reluctance which families have in sending members of their families to the state institutions. One would not hesitate to employ Dr. Norbury and Dr. Read to take care of any member of their families at home, and why should they mistrust the men of this type and character simply because they are at the head of large state institutions. They have the same integrity, the same conscience; they have the same earnest endeavor to do that which is best for the patient, and it devolves largely upon the medical profession to instruct the public in the fact that we have good state institutions, that we have good men at the head of them, and have competent members on the hospital staff to look after the insane. These men keep up interest in their patients just as we do in our patients. Let the people at the insane hospitals know that we have an interest in their work; that we endorse good scientific endeavor, and that we realize they have a hard position to fill, and that we are proud to help them along.

Dr. J. W. Pettit, Ottawa: Just one word with regard to the Illinois State Medical Society as applied to this work. For a number of years this society recognized the deplorable conditions existing in our state institutions to which reference has been made, and year after year it was urged at the annual meetings that we call attention to the conditions as they existed, and we kept hammering away on the subject until finally it became a political issue, and a campaign for governor was made in this state largely on the condition of our state institutions. Therefore, we must not lose sight of the fact that it was the organized profession of this state that inaugurated the movement that made all these things possible.

Dr. Carl E. Black, Jacksonville: I feel like saying a word or two in addition to what has already been said, for two reasons: first, for the splendid fund of information that this paper contained, and, second, because the writer of the paper himself illustrates the advantage to the people and to the profession of this state, of the system which has been inaugurated in Illinois of promotion of men for proven ability. I have had some indirect connection with one of the state institutions for a number of years, and I want to point out the advantage that comes back to the profession.

In Jacksonville we have under the new order of things a new class of men sent to the state institutions in the medical department, and these men are identified with our local medical society as they never were before, and they bring to us information we never got before. They are interested in their work, are seeing these promotions, and are taking up the work with entirely new life and new enthusiasm, largely on account of the new incentive. In that way the care of the insane, and the study of insanity is brought to the profession by these men by identifying them with our local and state societies.

There are several things which remain to be worked out in this connection. I, of course, have been particularly interested in the matter from the standpoint of surgery. I have never understood and do not now understand why it is that a patient in a state institution for the insane is not granted the same privileges

as regards surgical treatment that he is granted for other forms of treatment. The facts are these: if a patient has trouble which will require a surgical operation, or in whom a surgical operation is desirable, the officers of the institution find it necessary to get the consent of the relatives. In some instances these have not visited the patient perhaps for years, and have no real interest in the patient, yet as a protection the officers feel the necessity of getting the consent of these relatives. While relatives may have no real interest in the case, they are often reluctant to give consent to a surgical operation. A number of cases have come under my observation where patients have been denied the benefit of a desirable surgical operation because the relatives, who have not seen them for months or even years, are not willing to give their consent. Why is it that it is necessary to get the special consent of disinterested relatives for one form of treatment, when all other forms of treatment are carried on without any special consent. It looks to me as if consent should be given in the commitment. When a patient is committed to the care of the state, he is committed for the whole care, it seems to me that this should include surgical as well as other forms of treatment.

There is nothing which has been mentioned which is of more importance than the making of systematic post-mortem examinations in these cases. I have never been able to feel that the relation of the physical disabilities of the insane has been fully and properly connected up with their mental disabilities, and until there is some better way of studying the pathology of the living in the insane, and more freedom in conducting post-mortem examinations, we will still fail to have that amount of data which we should have for the best interest and best treatment of these cases.

I am very glad to have heard Dr. Read's paper, and I have been very much interested in it.

Dr. Julius Grinker, Chicago: I have not much to say on this subject, as everything has already been said; but I cannot help expressing my appreciation of the ideas contained in the paper, although I regret not to have heard all of it.

We must realize once and for all that the insane is a sick person—that he is not possessed of the devil— and the sooner we divest ourselves of the antiquated ideas current among the laity, and I regret to say even among some physicians, the better it will be for us and for these unfortunate patients. Some physicians are very fond of depicting the horrors of institutional treatment and they discourage the sending away of patients who need institutional care. There is a strangeness between those working in institutions and those outside of them, which is all wrong. We of the Chicago Neurological Society have made it our business for a long time to invite men from institutions like Dunning and the State institutions to come to us and read papers, and they have done it cheerfully and made the meetings a success. We know that the institutional men must come in contact with the medical profession in order to stimulate them to do the best work by receiving due appreciation and recognition. On the other hand a movement is in progress not only throughout this land, but everywhere, to make psychiatry a medical study, and to put it in touch with everything that medicine can bring to bear upon it from all sides, from the laboratory man, the student of metabolism, the clinician, and the surgeon. This can be greatly helped by having more often such papers as we have heard to-day by Dr. Read. The general practitioner must become interested in psychiatry, because after all insanity is on the increase and each community looks up to its physicians for advice in prevention and cure. I am glad that the subject has been so ably presented.

Dr. Read (closing the discussion): I do not know that there remains very much for me to say in connection with what has already been said. This is a very broad subject, and I felt some diffidence in bringing it before you this morning, but I felt that as a society you would have some interest in our institutions, and I know you do have it from what has been said here this morning.

Dr. Patrick referred to the movement that was begun many years ago in our State institutions and I know what he has said is very true. But the trouble is that scientific work in our institutions, as it was begun at times in the past, was

not carried out continuously and systematically. It went on for a time, and then died away, so to speak, for lack of stimulus, for lack of interest in the work, and that same thing has been referred to by the last speaker, who has pointed out the importance of our being in touch with the general practitioner. Physicians in these institutions need your confidence and cooperation.

Dr. Taylor brought up the important point of the need of more men, and that is a very serious problem. In the receiving wards where we receive one or two patients a day we need perhaps six or seven men to take care of these patients and to follow them up in our notes. It is not only the preliminary examination of a patient that counts, but the following up of that patient as he gains or deteriorates.

Dr. Black has emphasized the matter of the surgical attention which should be given our patients, and it is an important one. We have good men in our institutions who could do good surgery if they were doing it every day, but this they are not, and necessarily they must grow more or less rusty. Major surgery should be done by men who are doing it constantly and we should not be too afraid of an unavoidable mortality percentage.

SOME NECESSARY APPLICATIONS OF PHYSIOLOGIC PSYCHOLOGY *

DUNCAN B. MCEACHERN, M.D.,
CHICAGO, ILL.

Mr. President and Members of the Chicago Medical Society: I wish to apologize for some of the statements in this paper which may appear controversial. While not opposed to controversy, I am opposed to the obscuring of issues which it sometimes involves.

The title being somewhat indefinite, it may not be amiss to explain what I have in mind.

By physiologic psychology is meant that psychology which endeavors to explain mental processes upon a basis of sensory experience.

Physiology as a science has evolved tremendously in the last half century, e. g., the various operations of man's economy were formerly explained as being due to, or under the control of, what were known as vital agencies; and while this has been abandoned, when the ordinary processes of metabolism are being considered there still remains (probably due to the elusive and unseen character of mental activity) the belief in an immaterial principle called the soul, to answer the requirements of the higher processes of the nervous system.

The position taken by Draper in his Intellectual Development of Europe, as regards this vital agency or principle, is gradually being assumed by physiologic psychology towards this other immaterial element, or soul. The clearness with which Draper emasculates the vital agency theory, while still conceding the existence of an entity called the soul, tempts me to quote him; and in the light of our present-day knowledge of nervous anatomy, physiology, and pathology, it would seem that his views apply with equal force to all the manifestations of human life. Hear what he says:

* Read at a meeting of the Chicago Medical Society, May 24, 1911.

Physiology in its progress has passed through the same phases as physics. Living beings have been considered as beyond the power of external influences and, conspicuously among them, man has been affirmed to be independent of the forces in the world in which he lives. Besides that immaterial principle the soul, which distinguishes him from all his animated companions and makes him a moral responsible being, he has been feigned to possess another immaterial principle, the vital agent which in a way of its own carries forward all the various operations in his economy. But when it was discovered that the heart of man is constructed upon the recognized rules of hydraulics and with its great tubes is furnished with common mechanical contrivances, valves; when it was discovered that the eye has been arranged, on the most refined principles of optics, its cornea, and humerus, and lens properly converging the rays to form an image, its iris, like the diaphragm of the telescope or microscope, shutting out stray light and also regulating the quantity admitted; when it was discovered that the ear was furnished with the means of dealing with the three characteristics of sound, its tympanum for intensity, its cochlea for pitch and its semi-circular canals for quality; when it was seen that the air brought into the great air passages by the descent of the diaphragm, calling into play atmospheric pressure, is conveyed upon physical principles into the ultimate cells of the lungs, and thence into the blood, producing chemical changes throughout the system, disengaging heat, and permitting all the functions of organic life to go on; when these facts and very many other of a like kind were brought into prominence by modern physiology, it obviously became necessary to admit that animated beings do not constitute the exception once supposed, and that organic operations are the result of physical agencies.

If thus in the recesses of the individual economy, these natural agents bear sway, must they not operate in the social economy too?

As the moral responsibility of man is the consummation of all his sensory experience and in no way differs from that of the lower animal, except its original capital (a more highly evolved nervous system) on which to operate, you can see that Draper's assumption of the soul is a purely gratuitous one, or at least is only a speculative difference.

There are not many physicians who would disagree with Draper at the present day on the theory of vital agencies as he has outlined, but unfortunately, there are numbers who still accept the homocentric absurdity of a specialized method of nervous activity, in the face of all our knowledge of comparative anatomy and the perfect analogy of metabolic processes, and it is a laudable and I hope not a presumptuous belief to wish for the same accord in the psychic as in the organic operations; which are in reality one and the same thing. The difference existing would, to paraphrase Gibbon, be much the same as between John Calvin and St. Augustine: "It would require a theological microscope to discover it."

One of the fundamental principles of physiologic psychology, and the most far reaching in its application, as viewed by me, is that all psychic processes are the result of some extraneous stimulation, recent or remote; in other words, without sensory experience, and the necessary differentiation of cells which constitutes a sensory organ, thought does not exist, and no man, therefore, is unbalanced or can become so who interprets sensory experiences correctly. This leads me to deduce the following: that it is incumbent on the human animal to protect and perfect the apparatus by which sensory experiences are conducted, elab-

orated and interpreted. The highest development we are capable of, and the one development upon which all progress depends, is the development of the nervous system, peripheral and central, and the proper coordination between this peripheral and central nervous system is the best way to avoid those errors which lead to functional or organic cerebral changes.

As the subject is quite extensive and to a great many of you may appear abstract, I will purposely avoid the discussion of the special senses, and will limit myself to one of the conclusions of modern physiologic psychology, which I wish to apply, viz.: the doctrine of freedom of the will, and at this point let me quote Ziehen.

Scarcely perceptible tensions of the frontal muscles very frequently accompany our actions, especially where strong emotions are present at the same time. Such actions as these we are inclined to designate as voluntary action. This tendency, assisted by the fancy that we act from choice in the association of ideas, has led to the assumption of a special faculty of the will. But that which we call will, on strict analysis, is reduced essentially to the sensation of tension accompanying the association of ideas and the action. The feeling that we exercise a free choice in the association of ideas and in action, is easily explained by the fact that, in distinction from automatic acts, association and action are not only determined by external stimuli, but are also influenced by ideas, the sum total of which we may designate as our empirical "Ego." A definite action must follow certain external stimuli and certain ideas according to an inevitable law of causation, just as a stone detached from its support must fall in a certain direction with a certain velocity; accordingly physiologic psychology acknowledges no freedom of the will. But we believe that we exercise a free choice because (1) we ourselves are conscious participants in the active association of ideas and (2) although the result of this association, or in other words, the result of the play of motives is not distinctly foreseen, it is nevertheless anticipated and (3) because the decision is finally made by a part of the Ego, i. e., the prevailing idea.

Psychic processes consist of three factors: (1) Sensation or perception. (2) Association of ideas, and (3) action; and action is distinctiy circumscribed by the effects of the first two factors on the condition of the brain at the time. To say that we will do a thing means that what physiologists term positive tones are in the ascendancy and the assistant ideas predominate over the inhibitory. It is impossible to analyze all the minutiæ of voluntary action. Possibly some of it is a chemical process and due to the altering condition of the nerve cells. Psychiatry demonstrates, however, that no special faculty of the will exists. There are no special psychoses such as moral insanity, and the disturbances of volition, either of a compulsive or retarding character, are directly traceable to disturbances of the sentient life or altered conditions in the association tracts. To repeat, then, the present sensory stimuli along with the stored up images of memory which are the result of previous sensory stimuli determine our movements. Thought and action are strictly necessitated. Thought has been called internal action, and action is thought in execution or external action. The assumption of free will is a puerile and pernicious delusion and has no basis in fact; it is puerile because it can not be substantiated, and pernicious because of its results. In examining the reasons for assuming free will, I have

decided that we are the victims of theologic casuists and hair-splitters, who have contended that ethical distinctions and human accountability for actions, is removed by abolishing free will. Let us see; ethical distinctions are a part of the race's evolution, and are varied by economic, geographic and ethmic considerations. The most superficial view of human history, undeniably and without equivocation proves this assertion. Good conduct is that which has proved of economic advantage to the race at a given time, or what was deemed to do so. Bad conduct is that which negates this. By abolishing free will we are free to trace actions, good, bad or indifferent, back to their causes. When we see certain results which we deem bad, and which are the fruition of a long series of minor offenses committed previously, we attempt to obviate them by controlling all the incidental factors throughout life. We inculcate what we judge will eventuate in good results, and avoid what produces bad. What else do we contemplate in training our children? If free will was a distinct entity ethical education would be superfluous. Modern psychology ignores and deems incompatible with its conclusions the accountability for actions, law, medicine, and even theology, to the extent that it has been humanized, look for the underlying pathology, not to prove accountability but as a means of preventing infractions of biologic law. Punishment is not contemplated. It has always been a curious phenomenon to me that nearly every well defined position of modern science is considered heretical, and that the heresy hunters have almost unanimously and instinctively set the seal of disapproval on the logical conclusions of well-balanced thinking. The inquisitorial and inhuman method of judging our fellow-man has a strange fascination for the pharisee and the mental conceit underlying the free will delusion is music in the ears of the Lord's annointed. The results to be gained by accepting the conclusions of physiologic psychology are so momentous and far reaching that I hesitate to picture. It would require a sort of historical perspective or even a prophetic insight to approximately picture the beneficent results. In a general way and without any excesses of imagination I would say that all the waves of credulity which crystalized in Dowieism would disappear, and by Dowieism I include a whole host of the religious and therapeutic distortions which are paralyzing the psychic life of the nation. It is a grave indictment and it makes one sometimes despair to know that at least 50 per cent. of our population are potential disciples and believers in these exaggerations. The saving grace (to use a quasi religious phrase) of the struggle for existence and the consequent apathy engendered, and the comparatively few proselytes and protagonists, renders the number of actual believers relatively unimportant; while we still suffer from these psychic irregularities in other lines of thought and action. The application of physiologic thinking in the field of sociology and politics would bring about the recognition that knowledge was not the special asset of this or that group of men, but was dependent on the cultivation of the individual's powers of observation and the association of the ideas dependent on the same, social readjustments would follow and the hopelessness which we frequently see manifested by the hewers of wood and

drawers of water when they attempt to change their social status would disappear. The assets of mankind are his nervous system; it is his common capital, the same as the ability of all parts of animals to build similar nests, the thought, the science, the culture and refinements of life are the common property of the race, not to be preempted or used to exploit one class for the advantage of another. The anarchy of present day distribution of socially created products could not exist, or its corollary, the slum and the palace, in juxtaposition. A purely property career would not be justifiable or necessary and the evolution of the race would proceed along rational lines. The prejudice of races which exists because of economic strife, and which receives from the demagogue or politician a chimerical and Chauvinistic coloring, would be supplanted by the biologic truth that man, in order to live on the earth as the *genus homo*, must eventually become racially homogeneous. In applying laws and government society's attitude toward the inefficient, the human derelicts, the mentally diseased and the helpless, would be a combination of science and humanity, and the results would certainly take precedence over the residuum of that thought which burned witches and belabored the insane as the possessors of devils. The costly mechanism of applying rules over persons would be replaced by a government of things, permitting an equality of opportunity which would bring about the highest development of the individual as a social unit. The anachronism of political government based on geographic lines where a purely industrial activity dominates the scene would cease, and the parasitic and inefficient politician would give way to the industrial expert. In religion controlled by the ever dominant thought that our sensory experiences are the only avenues for information, the certitude of the theologian on those questions which transcend such experience would be modified and the cold and impartial conclusions of science would be the final word on all the doubtful propositions advanced. Heaven and hell would probably persist as subjective, or allegorical phenomena, but objective picturing would lose its significance with the large mass of the people and finally disappear. The question of a future state would be considered as a debatable assumption and the attitude of the agnostic would be the normal state of mind in the average man. The belief that this is not all, has probably done more to prevent mankind from correcting his errors or social organization than any other single factor in existence. We will probably decide with Metchnikoff that the pathologic termination of life and the inability to live a physiologic life cycle is largely responsible for views of futurity, and complacently acquiesce with him when he says that "if faith is essential such faith must be in the power of science." Not that faith, however, which requires a miracle to establish its position and differing only in degree, and not in kind, from the religionist's extra mundane conclusions, which one writer concluded were the "product of an empty stomach and an empty brain." Medicine would nevermore be the field where therapeutic vagaries would operate with such shameless disillusionment of the poor wretch "who climbs the last steps of life and time." Probably medicine has suffered more from the inroads of metaphysical

psychology than any other field of human endeavor. As the interest in theological abstractions ceases and its answers fail to satisfy the human animal in distress, the religious healer attempts to treat the body in order perhaps to retain his clientele and justify his occupation. Bodily ills are a reality from which none of us are at present immune and they have a material basis. Medical romancing has always been a large and lucrative field for the cultist and pathist, and even while we may concede that there is a residuum of truth advocated, yet the harm done is unquestionably greater than the relief afforded. We should ever bear in mind that truth bears no labels, and honesty of purpose is always undermined by a partisan or dogmatic position. As Gibbon admirably puts it, "Whenever the spirit of fanaticism, at once so credulous and so crafty, has insinuated itself into a noble mind it insensibly corrodes the vital principles of virtue and veracity." To crown all the physician and scientist would be the final arbiter on all questions of bodily and spiritual health. I use the word spiritual advisedly, and only for sake of charity. Bodily and spiritual health are synonymous. Education, morals and rectitude can never be placed on a physiologic basis where they properly belong without the aid of men acquainted with medical science. The obscurity and the inapplicability of what Spencer termed moral science is in great measure due to the altogether impossible standards advocated, and the unscientific and pernicious appeal to motives and rewards. The forces of Nature act and react on the just and the unjust impartially. Education and opportunity alone can develop the proper ethical standards. It may seem a species of adulation or optimism to think as I do that medical men are best able to elevate standards of conduct. Their contact with the abnormal and the morbid gives them the best opportunity of fixing normal and healthy postulates. While the psychic treatment of functional or organic nervous disorders is distinctly the province of the physiologic psychologist, and can never be delegated to the theologian whether sincere, fanatical, or fraudulent, as the end result is confusion, or the confirmation of some absurd hocus pocus or diseased introspection. The superficial wisdom of a Fra Elbertus or the self-deception of a Christian Scientist must be combated by the rationalist in medicine and surgery, who understands the limitations of his art and science. The therapeutic nihilism of an Osler indicates more wisdom and common sense than all the cults the pathies can ever conjure up. There are no short cuts to knowledge and we should remember that long before the new serum has been found social readjustment may correct the disorder. I am not disparaging the laboratory worker and I can remember on seeing my first post mortem what a thrill of enthusiasm overcame me. Here are the means and here are the measures of arriving at the secrets of life and if the veil is ever to be lifted this is the way, disagreeable as it may appear to the so-called esthetes. This thought has imparted to the dead house a halo which remains with me to this day. Oliver Wendell Holmes once said that there were human fellowships which furnished much the same kind of intoxication to him that alcoholics did to the average man. The keenest delights of living are after all intellectual

and only the open mind is capable of enjoying and participating in these to the maximum degree. The position of a doubting Thomas or a Pilate who queried, "What is truth," condenses more philosophic wisdom than all that Jonathan Edwards, Mary Baker Eddy, or any ecclesiastical exegete ever wrote. We stand in need of the same philosophic skepticism to save us from becoming a nation of fatuous, deluded numskulls. Let us take an inventory of ourselves once in a while and in the meantime prepare to deal sacredly and seriously with humanity's problems here and now. Disease, ignorance and crime are interchangeable terms, meaning much the same thing finally, and the solution is the fullest intellectual emancipation. This is the greatest secret of life and its unraveling is within our grasp. All else is controversial and debatable. We need to be afraid of error, and welcome the proven facts of science which alone deserve the appellation of truth and remember in all our vain glory and egotism the words of that sublime democrat, Whitman, "That a glance at a bean in its pod confounds the learning of all times."

6101 Green Street.

DISCUSSION

Dr. Leusman: I wish to congratulate the doctor on his paper. During my attendance at these meetings here for something like 20 years it has never been my privilege to listen to a paper so replete with general philosophical interest, so free from self-exploitation and so intimately in touch with modern struggle. Modern? The eternal struggle for intellectual liberty initiated when humanity grew conscious; let us say historically beginning with Anaxagoras, who dared to believe and express such belief in gods differing in some minutiæ from those held to be correct by his contemporaries. It took the genius of a Pericles to save his friend from being inflicted with the death penalty for so grave a crime. Socrates had to die for the same crime; there was no Pericles to defend him. And then the persecutions and executions sustained by the early and honest and simple-minded Christians on account of their faith at the hands of Roman mobs and Roman politicians. Then Hypatia, the heathen professor of mathematics and philosophy at Alexandria, bewitching picture of youth, of intellectuality, of the eternal feminine; she had to be slain by ignorant Christian monks set into murderish action by the envy, ignorance and bigotry of a Christian bishop. Her death was contemporaneous with the ascendency of Christianity to unlimited political power and the simultaneous setting in of the intellectual night of the dark ages for a period of 1000 or 1500 years. Who will count the victims—prominent and otherwise—sacrificed on the altar of intellectual liberty by the Holy Inquisition? Then look at Calvin burning Servetus the codiscoverer with Harvey of the circulation of the blood. Behold the frightful murders and unspeakable tortures inflicted on heretics or witches in the land of the free and the home of the brave by the fanaticism of Puritans. "But we do not persecute now, at least not to the killing point," some one says. What about Francisco Ferrer the founder of the modern school in Spain, the man who set about by means of secular instruction to redeem his fatherland from the thraldom of 80 or more per cent. of illiteracy under a church controlled system of education? Less than two years ago after conviction under a charge since demonstrated to be false he was shot to death in pious Christian Spain, a victim of priestly persecution and legal murder. Copernicus the rediscoverer of heliocentric astronomy did not dare to publish his work (written 30 years previously) till he felt natural death to be near. Giordano Bruno was burned at the stake for having the courage of his convictions and Galileo escaped a similar fate by an ostensible recantation.

Well at any rate, humanity began study by observing the heavens. Astronomy led to physics, chemistry, biology, psychology and sociology. The study of physiology led to psychology and psychiatry. And here again educated opinion

must make an urgent, a necessary appeal for free expression of all thought. Thus we find ourselves face to face with such questions as to the nature of truth and error, free will and determinism, responsibility, crime, vice, duty, altruism, philanthropy, sympathy, religion, miracles, animism, superstition, soul, witchcraft, spiritualism, faithhealing, the nature of bibles, their place in and out of schools, the nature of God and Gods and his or their place in and out of schools, in and out of politics, in and out of constitutions, nature of atheism, materialism, morals, sanity and madness.

Now as to some definitions, but I may here be permitted to state with regard as to what is to follow, that ideas are necessarily presented in fragmentary form; I am also deeply conscious of the difficulty of the undertaking relative to personal capacity and the still greater difficulty inherent in the subject matter. Since a wrong is the infringement of the rights of another, it is and must frequently remain an open question as to the dividing line between, as for instance, where the devout believer infringes on the atheist and vice versa. We must then show forbearance and have sympathy with each other's shortsightedness till finally reason leads to agreement.

Will we all have. In the last analysis this means the desire to live consciously or unconsciously. Heredity bestows upon man his nature, and environment modifies his nature. Thief and judge changing cradles and environments would change places. Natural law rules in the psychic world the same as in the physical. Will is controlled by preponderating desires called motives and motives are determined by heredity and environment. Are men automatons? We think not all of them nor entirely, since when man becomes intelligent it appears he then may to some, perhaps a microscopic, extent influence his environment and thus his nature and thus his will. As individual intellects differ they will react differently upon the same will to live under the same conditions of life, giving the appearance of freedom of the will and making it look as though volition was altogether a free act not determined by heredity plus environment but by man's own and free will.

Responsibility is an assumption by man-made law as a convenience and practical working necessity, just as in the case of the rich and the poor man a state of equality for the sake of convenience is assumed to exist before a court of law.

What is truth? Some say: Truth is the correspondence between our ideas of things and their reality. Since our five senses are imperfect and limited, sense and perceiving organs and our association-centers produce imperfectly working mental processes; even theoretically we can never hope to learn the absolute truth. Truth is born of reality and error is the child of misplaced imagination, delusion, illusion and hallucination. Dowie: was he intensely religious or was he plainly insane, or a plain imposter, or was he a scientific mixture of all three?

Duty is a legally not enforcible obligation to do something, an idol for good or evil, implanted into our consciousness by autosuggestion or inculcated by another more frequently a superior, for an ulterior purpose. Altruism, according to Macaulay, is far-sighted policy. Patriotism has been as great a convenience to the politician as medicine to the physician and the soul to the theologian.

Religion, the outgrowth from animism, is the belief in personal spiritual or supernatural beings who exert an influence in human affairs, which belief is strong enough to influence conduct. Atheism is freedom from religious beliefs. Sin is a theological crime, crime is a violation of man-made law, vice is a product of a violation of natural law. Miracles are ostensible violations of recognized laws of nature. The conception of the soul has been replaced by that of consciousness as experienced by certain cells of our brain.

Spirits are personified causes; the spiritualistic theory of disease has strongly tended to prevent progress in the medical art among the lower races (Tylor). Immortality is replaced by conservation of matter and force and fame, according to the worth of an individual and in proportion as faith in spooks loses its hold on the masses or even men of known mental power.

Reason is born of knowledge that is obtained through experience, experiment and observation. Thought is a function of certain brain cells; the truer thought operates in conformity with the laws of logic, and the reality of facts the more reasonable is thought. Intuition and instinct, primitive faculties, are inherited or acquired by long usage—experiences.

Henry Dumont says: "It is becoming more and more difficult to harmonize religious doctrines with developments in the intellectual and physical world, and the effect of progress is the destruction of religion. The motive power for good is a product of evolution; it is not acquired through religious beliefs of any description. To do good is not a religion, it is a necessity." Taylor, in Primitive Culture, "deplores the existence of a system so hateful to the man of science for its suppression of knowledge and for that usurpation of intellectual authority by a sacerdotal caste which has at last reached its climax now that an aged bishop can judge by infallible inspiration the results of researches whose evidence and methods are alike beyond his knowledge and his mental grasp."

In conclusion let me emphasize that narratives which to one side are sacred history may seem to the other mystic legend.

Where is the way out? Sympathy (put yourself in his place) is the angel that saves the bigoted believer or atheist from the terrors of their own conclusions; sympathy and charity tempered by reason are the saving worth while elements in creeds and dogmas and isms. Judgment tempered by sympathy makes for more justice and less legality and more natural law. To the stern, unalterable laws of nature we all must bow, our redeemer must be in the future, as history has shown it to have been in the past, not blind faith in ancient myth-makers or so-called authorities, but science and dependence on ourselves.

Dr. Charles J. Lewis: The subject of the paper does not lead readily to definitions. From this we are at a loss to know how to understand the technical terms of the doctor's otherwise ornate and excellent paper.

The essayist might have mentioned that Wilhelm Wundt was the father of physiologic psychology. Ziehen about the same time went farther than Wundt by studying the afferent path of the nervous system. Others have added to our knowledge of the function of this path. The function of nerve fibers in general had been previously studied, but scarcely any attention had been given to nerve cells.

We have some knowledge of the sensing tips of the nerves of common sensation as well as of the special senses, but of the ideating centers scarcely any at all. To know the meaning of physiologic psychology, we must know what the sensing and cortical cells do. Isn't it strange that we connect the scientific term physiology with the mythical word psychology, which has no content? I have thought that by following a hint in Carpenter's Physiology, edition 1860, we might substitute for it the word "cerebrology." This would be in accord with the mechanism of the nervous system and would make it easier to understand its function. But as long as we hold to the word psychology we must live in the mystic world of the past.

Ziehen is confusing in his use of the word "sensation" when he applies it to the working of the cortex. I think the proper place to apply the word sensation is in the end organ of sense, that is, the feeling of the sensory image in these organs is sensation. When the images are conveyed to the ideating (sensory) centers, ideas are formed of the objects observed. The course of these ideas may now be either to the association center, and thence to the motors, or by a direct path to the motor areas.

The association center, according to Ziehen, is the place where recently formed ideas are associated with fragments of previously formed ideas. A better assumption is that the five ideating centers send (?) their ideas to the associating center where they are compared, each with the other, and fabricated into judgment, reason and other connotations.

Will is represented as "action." A better view of will is to regard the motor areas as shipping stations from whence are shipped to muscles for action, ideas,

judgment, reason and other forms of nerve impulses that stream into them from the ideating and association centers.

Neither our essayist nor Ziehen have discussed the source of nerve impulses. In Foster's Physiology there is a sentence that implies that sense stimuli have something to do with the working of the brain. If sense stimuli become images, images ideas, and ideas in turn become reason, judgment, and "will" the sending of these out to muscles for "action," then Ziehen is right in holding that will is not free. To be free, there must be a mechanician in the brain that produces the material for action out of something else than sense stimuli.

By thus studying the sensory and motor paths, as I am sure we have anatomic grounds for doing, we will be able to conclude that cerebrology represents the work of the brain better than the word psychology. Moreover, this view of the activities of the senses and brain would easily lead us to form such associations that would stimulate communities to form closer social relations and thereby bring about a more equitable living.

Dr. Polki: It seems that there is a misunderstanding or some variation as to the terms to definitely designate this subject. The term "physiological psychology" as understood to-day does not mean sensatory reaction of the human being. Jennings, who made great studies on terms of physiologic psychology, started with the ameba and got no animal behavior that he could determine, but simply a motor response. Going on up to higher forms of life he still explains most of their action in terms of motor behavior. For instance, studying the mouse, certain pictures, or memory-ideas, apparently can be cultivated in the animal by a series of trials, but that does not prove that they are sensatory impressions or images. In fact, if you change the images in any way he seems to have lost all forms of learning, so that Jennings comes to the conclusion that while they may have ideas most of it is done by physiologic response.

Instead of going into speculation about terms, I believe it is well to follow Professor James, who says that before applying a difficult hypothesis we should take the simple. Take the things that can be expressed in terms of behavior before taking the activities of the cells or their responses, which are hard to study scientifically. To many the study of behavior as explained in physiologic terms is comparatively easy.

V. H. Podstata: I was greatly interested in this paper. At the same time, while liberality was praised and we were urged to be broad minded, yet the author proceeds to assume certain things as settled, positively decided, which I think cannot be so considered. We all agree that the single animal cell, the ameba, shows evidences of perception, a kind of association and very plainly reaction. We further find that in the human being there are simple nervous activities, such as the knee-jerk, that are elemental, showing simple sensory perception, association and reaction. Further we cannot doubt, if we have studied anatomy of the nervous system and the psychic activity, that even the most complicated psychic processes are undoubtedly based upon the elemental perception, association and reaction. Further still, we know that normal activity of mind is impossible without intact nervous tissue, containing the neurons needed for such activity. We may, in fact, trace some very complicated mental processes, like those needed for proper performance of speech, and possibly locate the very region where interruption has taken place in aphasia. But, when we have done that and perhaps more than that, surely we cannot boast that we know all about the inner activity of our brain.

The author stated that upon the acuteness of our five senses depends the scope of our mental activity. But we do not even know as yet all there is to be known about these senses of ours. We started with five and now we count perhaps fifteen of them. But even these many senses serve to indicate to us that we are in the very beginning of knowing as to how we receive impressions from the outside, what truly constitutes the sensory path to our brain.

Further, even though we have by far the highest form of mental activity in the entire animal world as we know it, we certainly do not possess the most perfect sensory apparatus. I do not believe we need question the fact that the

eagle sees more and farther than we do, that the cat can hear things that bear no sound to us, or that a dog can smell things where we find no odor. Therefore our superior mental achievements are not due to superior sense efficiency.

The study of the construction of our brain and the analysis of our psychic activity shows us that it is not our superior perception, but the extensive association and elaboration of the perceptions which enables us to attain the higher intelligence of which we are so proud now, even though we know that our best of to-day will be the laughing stock a thousand years hence.

In view of our serious limitations, it is very important to us to be true agnostics, that is, to be willing to stand up and say: "I do not know." Under no circumstances can we, either as religious enthusiasts or as atheists, undertake to criticize a fellow being: "In this essential thing you are mistaken, in this or that you act the fool." We must realize that we are only in the very early beginning of evolution or of the being called man. The one thing we may perhaps safely assume as true is that without a healthy brain we cannot develop healthy intelligence. We may, however, just as safely assume that we do not know anything as yet of many important influences which operate upon our brains and aid in shaping their activities. Further, we know little about the brain itself.

Let us therefore be liberal, let us be true agnostics. That is the only safe and sound position to take, and in taking it we shall be more receptive to later truths and in that way best aid in the human development and progress.

Dr. McEachern (closing the discussion): I was very much interested in the discussion. While I did not meet any violent opposition I was in hopes the discussion would touch on a theory that has been advanced by some psychologists, particularly by Wundt in Germany. Since the abandonment of the theory that a selective agency exists which determines what we shall do there has been advanced the theory of apperception. Dr. Lewis hinted at it and I should like to give you Ziehen's position on this theory. According to the advocates of apperception, this quality is found in the frontal lobes of the brain. A definite location was given because it would perhaps better conform to our knowledge in the natural sciences. Particular actions were controlled and determined by the activity and development of this particular region. You see the assumption is very similar to the metaphysical assumption of a soul. According to Ziehen the conclusions are not correct. He thinks association of ideas determines our actions, and is sufficient basis for explaining everything. This particular location has been put in the frontal lobe by Wundt despite the fact that large areas of the frontal lobe may be removed and the quality he attributes to apperception still remains and is only impaired to the extent that the association tracts of that region are involved. Ziehen contends further that the brain of the monkey is relatively as large as man with the exception of the lower part of the third frontal convolution, Broca's area of speech and the region which controls the trunk movements, which explains why these animals are unable to speak or assume the upright position.

Disease processes anywhere interfere with mental action; e. g., in hemiplegia which usually involves the Rolandic area and where most of the results are motor and involve one lateral half of the body. The destruction of the association fibers accounts for the inability of the hemiplegic to control his emotions. This probably explains Tillman's weeping over Lorimer in the U. S. Senate.

I agree with Dr. Lewis that probably cerebrology or cerebration is a more appropriate term. Physiologic psychology as defined by Ziehen, does not take into account what are known as automatic or reflex acts. Purely reflex acts occur in animals that have the cerebrum removed. You are all aware that removal of the cerebrum does not prevent the frog swimming or removing the irritation of acid placed on the opposite leg. Physiologic psychology is only concerned with processes in the cerebrum having a psychic content and that cannot be explained as automatic or reflex acts. Reflex acts can be explained as being governed in the cord; automatic acts in the optic thalmus, quadrigeminal bodies and cerebellum. There are some automatic acts which are probably developed from reflexes and some that were originally psychic by a process of

retrogression become automatic. The ability of an animal to avoid obstacles illustrates an automatic act.

I agree with a great many of the remarks that have been made but I wished to bring out this point on apperception and I wish to explain another phenomena known as hallucinations to prove that sense perceptions only are necessary. Hallucinations are nearly always the result of diseased sensory organs. It has been proven that people without sight or hearing since birth never have hallucinations of sight and hearing. In hallucinations a reversal of the ordinary processes exist which is first stimulation of a sensory cell carried on to the memory cell and then action. In this condition the memory cells react on a diseased sensory cell, and then action follows.

What I had in mind in making this talk was to make it as emphatic as possible that where we can apply a physiologic explanation to processes that remain more or less obscure we should do it, instead of looking for a supernatural hypothesis. I think this method of reasoning is absolutely essential to the development of man, otherwise we shall never get the best results out of literature or out of life. I believe with one of the discussionists that agnosticism is the correct position for us to take, but in my agnosticism I would not allow absurdity to propagate and perpetuate itself. We should take measures to correct that which is absurd. The assumption that every man's religion is a personal affair is wrong; it may be a menace to the community in which he lives.

STUDIES IN MIXED INFECTION IN PULMONARY TUBERCULOSIS *

ROSWELL T. PETTIT, M.D.
Bacteriologist, Ottawa Tent Colony

The importance of mixed infection in pulmonary tuberculosis is at the present time a much-disputed question. Some investigators believe the tubercle bacillus responsible for all the pathologic changes, while others believe the tubercle bacillus is of little importance and the organisms of mixed infection are responsible for all the damage done. Between these extremes of opinion are those observers taking a middle ground, some assigning the major rôle to the tubercle bacillus and considering the organisms of mixed infection of less importance, and others assigning the major rôle to the organisms of mixed infection and considering the tubercle bacillus of little importance.

This disparity of views of different observers is due to the inadequacy and inaccuracy of the methods used in the investigation of this problem. In all the work done approximately seven different methods of investigation have been used: (1) clinical study; (2) sputum examination; (3) post-mortem bacteriologic and histologic examination of the lung; (4) leukocyte count; (5) opsonic index; (6) animal experimentation, and (7) blood-cultures (a) after death, (b) during life.

Clinical study gives no definite information. Examination of the sputum—washed or unwashed—is not reliable because all the organisms of mixed infection in pulmonary tuberculosis are found normally in the

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* From the Laboratory of the Ottawa Tent Colony, Ottawa, Ill. Work done under Max Pam Research Fund.

mouth, pharynx and trachea. Post-mortem examination is of little value because of terminal, agonal and post-mortem invasion; and the leukocyte count and opsonic index are indirect methods. Blood-cultures after death are not indicative of conditions in the living because of agonal and post-mortem invasion. Blood-cultures during life in the hands of early workers—up to 1900—were of little value because sufficient care in the prevention of contamination from the skin and air was not used. Later workers, using a more careful technic—drawing a larger quantity of blood directly from a vein under aseptic conditions—have been uniformly unsuccessful in recovering pyogenic organisms from the blood-stream. Tessier,[1] Jochman,[2] Panchi,[3] Benohr[4] and Reiche[5] altogether have made approximately 650 examinations of the blood and recovered the streptococcus or pneumococcus only sixteen times, or 2.4 per cent. positive results.

From these results it has been concluded that if pyogenic mixed infection is of importance in tuberculosis, the action is due to soluble toxins being thrown into the general circulation from a localized area of infection rather than a general bacteremic infection.

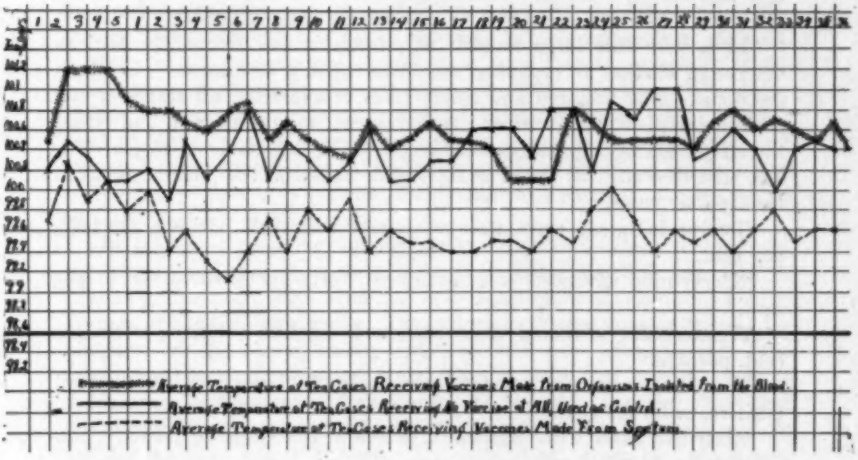
The history of the development of the bacteriologic investigation of the blood in various diseases shows an increase in positive blood findings with the development of more careful bacteriologic technic. Because of the possibility that the negative results of these workers may have been due to inefficient technic and because of the direct evidence furnished by bacteriologic examination of the blood during life, I decided to use this method of attack in the study of mixed infections in pulmonary tuberculosis. It was decided *a priori* that the most efficient technic would be one in which a large quantity of blood was drawn under conditions eliminating contamination from the skin and air as nearly as possible, and cultivating the organisms in an environment but little different from the conditions under which they had been living in the human body. Several methods of skin sterilization were used—scrubbing, washing with carbolic and bichlorid, painting with iodin, and scrubbing with alcohol. Scrubbing with alcohol was found to be most efficient and convenient. Various culture media were used—bouillon, glucose bouillon, litmus milk, plating in agar and in glucose agar and incubating the undiluted blood.

After considerable experimentation the following technic was adopted. The blood was aspirated directly from a vein under aseptic conditions in all examinations. In about the first forty cases examined glass beads were sterilized in the aspirator, the blood was drawn in and allowed to clot. When the culture media were ready, the blood was defibrinated in the aspirator by shaking with both ends closed and then transferred to the culture media. However, in the remaining ninety cases it was found that by having the culture media ready and by working quickly, the blood could be transferred from the aspirator to the culture media before coagulation took place. This variation in technic made no difference in

1. Tessier: Jour. de physiol. General, Par. III, 223.
2. Jochman, G.: Deutsch. Arch. f. klin. Med., 1905, xxxiii, 558.
3. Panchi: Berl. klin. Wchnschr., 1908, No. 41, 1840.
4. Benohr, R.: Mitt. a. d. Hamburg Staatskrankenanst, 1908, viii, 323.
5. Reiche, T.: Med. Klin., Berlin, 1909, v, 1962.

the relative number of positive results. The aspirating device was the familiar glass bulb, one end plugged with cotton and aspirating tube attached, a rubber connection and antitoxin needle on the other end; the needle was protected by a test-tube. Immediately before using, the whole aspirator—including the tubing—was wrapped in a towel and sterilized in the autoclave at 120 C. for fifteen minutes or more. In drawing the blood, the upper arm was constricted, the cubital region scrubbed vigorously with alcohol, and anesthetized with ethyl chlorid and the venous puncture made. When the blood commenced to flow the compression was relieved and about 15 to 30 c.c. of blood aspirated into the bulb. The number of cultures showing contamination with *Staphylococcus albus* was 10 per cent.

In transferring the blood from the aspirator to the culture media, the needle with its rubber connection was detached, the end of the glass


Average Temperature of Ten Cases Receiving Vaccines Made from Organisms Isolated from the Blood.
Average Temperature of Ten Cases Receiving the Vaccine of All Used as Control.
Average Temperature of Ten Cases Receiving Vaccines Made from Sputum.

aspirator flamed, the corks of the culture tubes and flasks flamed and the corks removed by an assistant, the necks of the flasks and tubes flamed and the desired amount of blood transferred quickly to the culture media. Every possible precaution against contamination was used. One or 2 c.c. of blood was put in each of three flasks containing 5 c.c. of melted agar cooled to 40 C. and plated out by mixing and laying the flasks on their sides, 5 c.c. put in each of two or three flasks containing 50 c.c. of bouillon and the remainder—2 to 5 c.c. full blood—incubated in a sterile test-tube.

After twenty-four hours the agar plates were examined for deep colonies showing green discoloration or hemolysis, and any such transferred to blood-agar slants, smears from the full blood and bouillon were examined and transfers were made from all flasks to blood agar slants. After forty-eight hours 1 c.c. of the bouillon cultures was plated in blood agar, a sterile pipette being used in making the transfer. All cultures, except those definitely staphylococci, were studied microscopically and

culturally. Cultures were made on blood agar, plain agar, potato gelatin, milk, bouillon, dextrose agar and serum inulin agar or serum inulin water. In all cases considered positive the organisms grew in pairs or chains, were Gram positive, showed clear dewlike growth on blood agar, little or no growth on plain agar, no visible growth on potato, little or no growth without liquefaction in gelatin, acidity with or without coagulation in milk, scant growth of pairs or chains in bouillon, little or no growth in dextrose agar.

The differentiation of the streptococcus and pneumococcus—in so far as that is possible—was made on the following criteria:

1. Reaction on blood-agar plates.
2. Chain formation on blood agar and in bouillon.
3. Reaction on serum inulin agar or in serum inulin water.
4. Growth in gelatin, capsule formation, growth on plain agar, and morphology were not considered of especial diagnostic importance, although they were considered in making the differentiation.

Even with this large number of criteria it was frequently hard to determine whether an organism should be called a streptococcus or pneumococcus. One hundred and thirty cases representing all stages of the disease, incipient, advanced and far advanced, were examined, and either the streptococcus or pneumococcus recovered in fifty-nine, or 45 per cent. The streptococcus was found in thirty-five cases and the pneumococcus in twenty-four cases.

Twelve incipient cases were examined with two positive, or 16⅔ per cent.

Ninety-nine advanced cases examined, forty-five positive, or 45 per cent.

Nineteen far advanced cases examined, thirteen positive, or 68 per cent. positive.

Sixty-five cases with temperatures above 100 examined, thirty-seven positive, or 58 per cent.

Sixty-five cases with temperatures below 100 examined, twenty-two positive, or 34 per cent.

These results show that mixed infection is an important factor in pulmonary tuberculosis, and that pyogenic bacteremia is a common occurrence; that it is comparatively rare in the incipient stage, more frequent in the advanced stage, and very frequent—over 60 per cent.—in the far advanced stage.

Bacteremia is found in cases with cavities and in cases without cavities; is twice as frequent in cases showing temperatures above 100 as in cases showing temperatures below 100.

Pyogenic bacteremia in pulmonary tuberculosis is not necessarily a terminal, agonal or post-mortem invasion, but occurs in all classes of cases many months before death or ultimate recovery.

Active immunization with tuberculin has been used against the tubercle bacillus with fairly good results, but if the organisms of mixed infection are responsible for a share of the damage done, active immunization against these organisms should also be of value. Because the

secondary organisms are not the same in all cases, autogenous or personal vaccines should be used if direct treatment is to be of value. Since June 15, 1909, I have administered autogenous vaccines in eighty-four cases of pulmonary tuberculosis at the Ottawa Tent Colony. Of these eighty-four cases fifty-six were under observation two months or longer. Patients not under observation at least two months are not included in this report.

A study of the criteria of improvement in pulmonary tuberculosis has been made on these cases, and comparison with groups of cases of the same kind not receiving vaccines have been made. It was early determined that comparison of weight was not a reliable basis for comparison. The amount of expectoration is frequently very irregular, and the physical findings, except from month to month, are of little value in determining their action, and some cases not receiving vaccines have improved as markedly and as rapidly as cases receiving them. The opsonic index in a series of fifteen cases showed an increase after inoculation, but the opsonic index, at present, is not considered a reliable indicator of recovery. A study of the temperature should show some results, especially if the temperature is caused by the organisms of mixed infection. The study of the temperature curves in individual cases yields but little; marked positive, doubtful and negative results are found in cases receiving and cases not receiving vaccines; therefore, in order to obtain as nearly a just comparison of results as possible, the average of a number of cases should be made the basis of comparison.

In ten cases receiving autogenous vaccines made from the sputum, the afternoon temperature from five days before the first injection of vaccine to forty-five days after the first injection, was taken and a daily average of the ten cases made. This gave the average temperature of the ten cases for the period during which vaccines were administered. Ten cases showing similar lesions were selected from the group receiving autogenous vaccines made from organisms isolated from the blood, and the average temperature of this group was obtained in the same manner and for the same length of time. Ten cases showing similar lesions were selected from cases not receiving vaccines at all and recorded and averaged in the same way. All recorded cases were subjected to the same conditions of housing, diet, exercise, season, climate; in fact, the extraneous conditions were equalized as nearly as possible. The average temperature of each of these groups was plotted graphically (see Chart), and a comparison of these curves shows very plainly that autogenous vaccines made from organisms isolated in blood-cultures have no effect on the temperature, while autogenous vaccines made from organisms isolated from the sputum have a marked reducing effect on the temperature. Vaccine, in all cases, was administered every five to ten days. There were four moderately advanced, five advanced and one far advanced case in each group selected for comparison. From a study of these averaged temperature curves the following conclusions are drawn:

1. Autogenous vaccines made from organisms isolated directly from the blood stream in pulmonary tuberculosis have practically no effect on the temperature.

2. Autogenous vaccines made from organisms isolated from the sputum have a reducing effect on the temperature in pulmonary tuberculosis.

It has also been observed that during the past nineteen months, June 15, 1909, to Jan. 15, 1911, hemorrhages have been less frequent than before. The class of patients, diet, exercise, sleeping conditions, supervision, etc., were practically the same as in preceding years; the only new factor introduced into the treatment was the administration of autogenous vaccines. It has occurred to me that possibly the injection of vaccines against the organisms of mixed infection had a protective action against tissue dissolution and hence against hemorrhage. In all cases considered in the class receiving vaccines at least three doses of vaccine were administered.

In thirty-two cases vaccines were made from organisms isolated from the sputum and in twenty-two cases vaccines were made from organisms isolated from the blood stream. The whole group of fifty-four cases is compared with the group not receiving vaccines and the cases receiving vaccines made from organisms isolated from the sputum and blood are considered separately. The results are tabulated as follows:

TABLE 1.—HEMORRHAGES BETWEEN JUNE 15, 1908, AND JAN. 15, 1911, PATIENTS NOT RECEIVING VACCINES

	No. Cases.	Hemorrhages.	Per Cent. Hemorrhages.
Incipient	66	..	..
Advanced	131	31	15
Far advanced	10	..	..
Total	231		

TABLE 2.—HEMORRHAGES BETWEEN JUNE 15, 1909, AND JAN. 15, 1911, PATIENTS RECEIVING VACCINES MADE FROM ORGANISMS ISOLATED FROM SPUTUM OR BLOOD

	No. Cases.	Hemorrhages.	Per Cent. Hemorrhages.
Incipient	6	..	..
Advanced	42	3	5.5
Far advanced	6	..	..
Total	54		

TABLE 3.—HEMORRHAGES BETWEEN JUNE 15, 1909, AND JAN. 15, 1911. PATIENTS RECEIVING VACCINES MADE FROM ORGANISMS ISOLATED FROM SPUTUM

	No. Cases.	Hemorrhages.	Per Cent. Hemorrhages.
Incipient	2	..	..
Advanced	25	1	3.1
Far advanced	5	..	..
Total	32		

TABLE 4.—HEMORRHAGES BETWEEN JUNE 15, 1909, AND JAN. 15, 1911. PATIENTS RECEIVING VACCINES MADE FROM ORGANISMS ISOLATED FROM BLOOD

	No. Cases.	Hemorrhages.	Per Cent. Hemorrhages.
Incipient	3	..	..
Advanced	16	2	9
Far advanced	3	..	..
Total	22		

TABLE 5.—RESULTS IN CASES SHOWING DISTINCT HEMORRHAGIC HISTORY. PATIENTS NOT RECEIVING VACCINES

Number showing hemorrhagic history	8
Hemorrhages while in institution (3 to 5 months)	3
Per cent. hemorrhage	37.5

TABLE 6.—RESULTS IN CASES SHOWING DISTINCT HEMORRHAGIC HISTORY. PATIENTS RECEIVING VACCINES

Number showing hemorrhagic history	11
Number having hemorrhages in institution after vaccine was begun (3 to 5 months)	1
Per cent. hemorrhage	9.1

From these tables it is seen that the percentage of hemorrhage in cases receiving vaccines is approximately one-third of that in cases not receiving vaccines. It is also seen that the percentage of hemorrhage in cases treated with vaccines made from organisms isolated from the sputum is very much lower than it is in cases treated with vaccines made from organisms isolated from the blood, and while it is not admissible to draw definite conclusions from a study of fifty-six cases, the results are indicative, and I believe, will justify the administration of autogenous vaccines in a large number of cases as a protective measure in the same way typhoid inoculations are used in the prevention of typhoid fever.

The results of this work may be summarized as follows:

1. Mixed infection is of great importance in pulmonary tuberculosis.
2. The mixed infection is not a local one confined to the lung, but is a general blood infection.
3. This general blood infection is not a terminal septicemia, but can be found in all stages of the disease, showing all degrees of activity many months before death or ultimate recovery.
4. The percentage of positive blood-cultures increases in direct ratio with the progression of the disease and the activity of the condition.
5. Blood-cultures in pulmonary tuberculosis are of value in the diagnosis of mixed infection, giving the only really exact information concerning this condition.
6. Vaccines made from organisms isolated from the blood appear to be of little value in the treatment of tuberculosis as shown by the temperature curve.
7. Vaccines made from organisms isolated from the sputum are of marked value in the treatment of tuberculosis as shown by the temperature curve.
8. Active immunization against mixed infection seems to protect against hemorrhage.

ATTENUATED TYPES OF SUPPURATIVE SPHENOIDITIS IN RELATION TO SO-CALLED POST-NASAL CATARRH, TO HEADACHE WITH MENTAL DAZE AND TO ASTHMA*

W. E. CASSELBERRY, M.D.,

Professor-Emeritus of Laryngology and Rhinology in Northwestern University Medical School; Laryngologist to St. Luke's Hospital; ex-President of the American Laryngological Association

CHICAGO

Interest in the accessory sinuses is culminating in a new nasal pathology. There are twenty or more of these outlying and attic chambers of the nose which together have an area, as well as a proclivity for infection by germs, far in excess of all the rest of the nasal structure. Nasal polypus has been merged with sinus infection, hypertrophy of the middle turbinal with hyperplastic ethmoiditis and atrophic nasal disease, as I once

* Read, in abstract, before the Chicago Medical Society, Dec. 28, 1910.

suggested, with suppurative ethmoiditis. In the same trend will be found my present theme, to the effect that the condition, classed as naso-pharyngitis but commonly referred to as post-nasal catarrh, is due, to an extent not yet realized, to infection of the sphenoid sinus, together usually with implication of the post-ethmoid cells. The exact source of this "catarrhal" flow or "dropping into the throat" has been wont to elude, with embarrassing frequency, the most skilled in the art of "mirror gazing." At times, empyema of the antrum, secreting clefts of adenoid overgrowth or turbinated posterior hypertrophy could be held responsible and the "dropping" then be remedied, but more often, despite all efforts, the flow would persist, showing that the fountain head had not been reached. The sphenoid sinus, though sometimes suspected and by Schaeffer,[1] Hajek[2] and others[3, 4] vaguely accused, being out of sight, has been out of mind, until adrenalin's vaso-constrictor effect availed to facilitate reaching to its depth by exploration and operation. By this and similar means my suspicion has so often been converted into fact that I seek to attach to sphenoid infection its full import as a source of post-nasal discharge. In point of frequency, however, it is not that grade of infection already known as empyema or suppuration of the sphenoid sinus, whose product is typical pus, but it is the less pronounced, hitherto not definitely recognized, degrees of suppurative sphenoiditis, herein designated for the sake of emphasis, as "attenuated types," and whose secretions appear as variously modified puruloid products—which result in the kinds of post-nasal discharge specified. Bacteriologically, there are many varieties,[5] but most of the puruloid products which constitute post-nasal discharge may be grouped, for the purpose of clinical recognition, as issuing from the sphenoid sinus, into two classes.

The first class includes secretions, varying from pus to muco-pus, of the sort familiar in focal suppuration like that of sinus empyema of a minor degree. If the nasal space permit, it may be observed to issue as a bead from the sinus, being mobile at its source and colored from pale yellow to a bright orange or saffron hue. It may thicken, but not into a varnish-like film, and it does not readily induce nasal or pharyngeal atrophy, tending rather toward associated hyperplasia of the edematous type and polypi in the spheno-ethmoid sulcus.

The second class of secretion is quite unlike the product of ordinary focal suppuration. It is a viscid, mucilaginous, sometimes fetid substance which, when copious, forms into long, ropy strings and blocks the nasal passage, defying ordinary means of expulsion. When scanty it accumulates over the Eustachian tube or elsewhere in the naso-pharynx in brownish splotches, comparable only to liquid glue, which, when "set," form hard adherent crusts, liable to require the leverage of a probe

1. Schaeffer, Max: Die Krankheiten der Keilbeinhohlen, Heymann's Handbuch, iii.
2. Hajek: Nebenhohlen der Nase, dritte Auflage, 1909.
3. Onodi, A.: The Laryngoscope, November, 1909.
4. Berens, T. Passmore: Tr. Am. Laryng. Assn., 1905.
5. Turner, A. Logan, and Lewis, J. C.: A Further Study of the Bacteriology of Suppuration in the Accessory Sinuses of the Nose; reprinted from the Edinburgh Med. Jour., April, 1910.

to pry them loose; but when not quite so scanty it spreads on downward like a coat of varnish over the posterior wall of the pharynx, where its characteristic tendency to induce atrophy with dryness by throttling blood vessels and glands, is exposed to view. Atrophic or dry pharyngitis, therefore, though hitherto regarded as an independent, rather intractable disease also should take its proper place as an indicator, pointing upward, to the primary focus of infection—the sphenoid sinus. Moreover, the recognition and elimination of suppurative sphenoiditis as the chief source of the film which incrusts the pharyngeal wall, opens up for the first time a definite and hopeful line of treatment for atrophic pharyngitis, inasmuch as the atrophied mucosa shows, thereafter, considerable power of regeneration.

It is of diagnostic significance looking toward the exclusion of ethmoid implication, to determine by the mirror whether or not either one of the two pathways favored by an unmixed sphenoid discharge, be followed. The route taken by a scanty secretion is apt to be marked by a streak of viscid discharge leading from the sphenoid outlet laterally downward into Rosenmüller's fossa, where it collects till it overlaps the Eustachian orifice. The other route is taken by a discharge copious enough to bridge the space to the rear edge of the septum, down which it courses to collect in the back part of the inferior meatus of the nose.

The osteum sphenoidale itself is located out of sight, nor is the outlet visible by reflection from the rear unless marked by a bead of pus or protruding polypus. However, in the rhinoscopic image, just outside the osteum, can be seen a portion, one centimeter in length, of a probe inserted in the sphenoid sinus, while a lip of the osteum is apt to be raised by the probe into the mirror's scope. As this is the best method of proving the introduction of the cannular probe, to give assurance of reliability to the diagnostic tests which follow it, I have sought to perfect the technic of the method and make it more generally feasible. Thus, to prevent slipping out of the cannular probe during the forward adjustment of the patient's head, required for rhinoscopic examination, the probe is anchored to the dorsum of the nose by a flexible wire and a piece of rubber plaster (Fig. 1); and to avoid the annoyance of having to withdraw the probe to reintroduce a cannula for the irrigation test, a combination cannula and probe of original design is used which for service as a probe is well balanced, bulbous-pointed and plainly graduated at 7-9-11 cm., and for service as a cannula, has a flattened socket with a vertical plate-like fingerpiece to aid in guiding the distal curvature in the proper vertical line. A perforation in the plate provides for the anchoring wire (Fig. 1). Having inserted the cannular probe 6.5 or 7 cm. to the anterior sphenoid wall, near to the nasal roof, above the osteum, one feels around with its bulbous end, in short steps zigzag downward but inclining more toward the septum, when suddenly it is felt to slip into the cavity as if engulfed, reaching a total distance of 8 to 11 cm. or more, measured not from the nasal spine, which is difficult to identify, but from the column just in front of the naris, where it is naturally crossed by the probe.

Confirmation of the presence of the cannular probe in the sphenoid can be felt and heard as well as seen. Tapping the sinus wall within, from point to point, not only serves to indicate a proper sphenoid contour, depth and direction, but it often elicits another characteristic which I will term the sphenoid click—a touch as if the bone were almost but not quite bare, accompanied by a leaden metallic clicking sound, a combination peculiar to the sphenoid and not produced in like degree in any other sinus. It is not caused by diseased bone but by the fact that certain areas of bone within the sphenoid naturally have little covering and are somewhat resonant. Areas of diseased or dead bone possibly

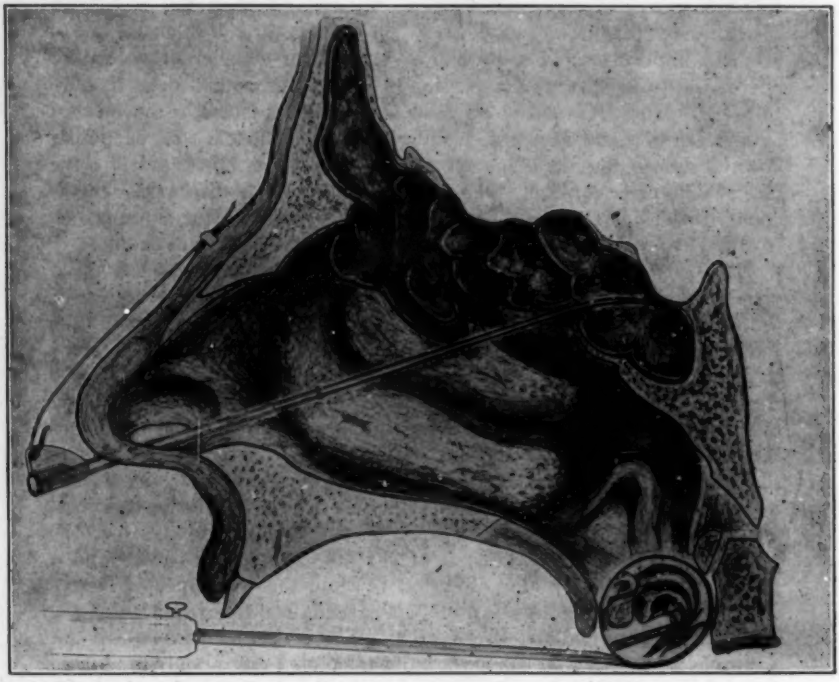


Fig. 1.—Casselberry's sphenoid cannular probe, its distal end inserted in the sinus in readiness for the irrigation test, its proximal end anchored to prevent slipping out and the rhinoscopic image, as viewed to prove its position in the osteum sphenoidale.

may be encountered, but in the presence of the "sphenoid click" the sense conveyed must be unmistakably rough and grating in order to be interpreted as due to dead bone.

The irrigation test is of the first importance in precise diagnosis, but I have found it necessary carefully to adapt the apparatus to the purpose by assembling in portable cases multiple positive and negative pressure bottles having uniform hose and couplers which fit all the cannulas and compressed air cut-offs. It is adjusted to be operated by knee

or foot pressure and the mechanism with solution is so standardized that the office assistant, by routine, can quickly fill, connect and disconnect it, which permits the operator, unassisted, to test one or more sinuses without unreasonable expenditure of time or change of position.

Records are kept of all sinus cases by sketches and notations on life-sized stock diagrams, the actual cannular probe used, with distance and curvature, being outlined on the chart in connection with the particular sinuses tested (Fig. 2). From fifty to sixty entries of this sort have been recorded under the diagnosis, in part, of suppurative sphenoiditis, the diagnosis being qualified for the reason that, in less than half the number, was the infection limited to the spheno-ethmoid group, other

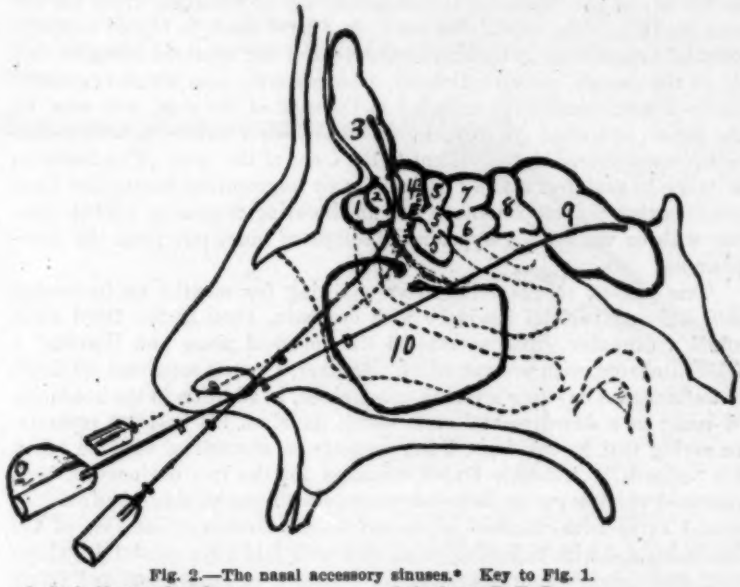


Fig. 2.—The nasal accessory sinuses.* Key to Fig. 1.

1, 2, 3, if none forsakes;
Frontal cells, as Killian states,
3 mayhap the sinus makes,
4 the frontal probe mistakes,
5 the bulla, sections three,
All belong to A. E. C.
6 the lower P. E. C.,
7 ascending P. E. C.,
8 the cell of highest meatus,
9 the sphenoid (hawking screatus),
10 the antrum, first and greatest.

* Any of the frontal cells (higher infundibular cells) may be absent and exceptionally one or more additional (lower) infundibular cells may be present. The frontal sinus quite commonly is formed from and represents the third frontal cell, and sometimes the second cell, although typically it develops from the frontal recess. The fourth frontal is the anterior ethmoid cell, which the frontal sinus probe is prone to enter by mistake, and then a too horizontal slant of its handle will indicate the error (Fig. 2), unless cell 4 happen to be enlarged forward in the form of a frontal bulla. A. E. C.—Anterior ethmoid cell. P. E. C.—Posterior ethmoid cells. The "cell of highest meatus" opens above the superior turbinal, but it may be rudimentary and then its position next to the sphenoid is usually taken by an additional post-ethmoid cell—the upper cell of the superior meatus.

sinuses in the remaining half having been jointly affected, and in less than one-eighth of the number was the infection limited to the sphenoid alone without involvement of the post-ethmoid cells. A study of this series leads to the conclusion that aside from antrum disease, which may

discharge backward but below, not above, the middle turbinal, and with the exclusion of adenoid growth or clefts, Thornwald's bursa and pronounced turbinated posterior hypertrophies, practically all other chronic post-nasal puruloid discharges, are due to suppurative sphenoiditis.

Headache.—The headache of suppurative sphenoiditis baffles the descriptive power of patients, who often cannot tell exactly where it is or what it is like. About one-third of my sphenoid series suffered occipito-parietal pain, the best description being given by a university professor, who said, "It is a boring pain toward the middle of the head, far back between the eyes." More often it is located in the back of the head but connected also with pain far back in the eyes, and next in order is the top of the head and side near the top or radiating from the ear and mastoid to the top of the head; so I have come to regard occipito-parietal headache as indicating exploration of the sphenoid sinus, in fact of all the sinuses, for exceptionally, I have known pain which originated in the frontal sinus to be reflected to the back of the head, and once, by an undue irrigation pressure in the sphenoid, I caused a severe pain which was referred by the patient to the front of the head. The headache is prone to manifest a daily periodicity by augmenting during the forenoon, lasting till late afternoon and ameliorating or ceasing toward evening with or without an appreciable escape of muco-pus from the naso-pharynx.

One patient sought relief after enduring for months an increasing occipital and parietal headache with eye pain, when at the third daily effort a cannular probe penetrated the sphenoid sinus and liberated a fetid discharge, with prompt relief. Another, a young merchant, addicted to an incessant hawking screatus, complained, in addition to the headache, of being in a dazed mental state which impaired his business capacity, he saying that he could not think properly on account of what he called his "catarrh." A double Hajek operation for the free drainage of both sphenoid sinuses was so definitely successful in remedying his disability that I agree with Sleuder[6] in respect to the disabling character of the headaches and with Schaeffer[7] in the emphasis laid upon mental deterioration, despondency and incapacity for business, as serious and not infrequent symptoms of suppurative sphenoiditis. Other similar conditions observed, each in different patients of my series, were mental hebetude, lapse of memory and neurasthenic excitability.

Merely touching with cotton the site of the spheno-palatine ganglion caused patients to remark that the right spot was reached, as it excited the same kind of pain or suggestion of neuralgia as that for which relief was sought. Occasionally when, with a probe or spheno-ethmoid cutter, I reached the vicinity of the spheno-palatine ganglion along the post-ethmoid wall and adjoining face of the sphenoid sinus, the patient has exclaimed at suddenly feeling a sharp pain at one or more of these five points: the back of the head, the top of the head, the eye, the ear and upper jaw. These are also the starting points of the pain when it assumes

6. Sleuder, Greenfield: The Syndrome of the Sphenopalatine Ganglion Neurosis, Tr. Am. Laryng. Assn., 1910.
7. Schaeffer: Loc. Cit.

a somewhat neuralgic form. The ganglion distributes sensory branches to the spheno-ethmoid region, the anastomoses of which, through the ganglion's connection with the superior maxillary division of the fifth nerve and thence to its dental and auriculo-temporal branches, and also through the Gasserian ganglion to the ophthalmic division of the fifth nerve, account for the transfer of the painful impulses to at least four of the five points mentioned. The evidence is reasonably conclusive that sphenoid-ethmoid disease is capable, by exciting the spheno-palatine ganglion, of causing headache of the type described, but it should not be inferred that all sphenoid headaches originate through direct action on the ganglion, for the prompt relief afforded by the liberation of retained discharges and the analogy of pain by distention in other sinuses indicate that distention of the sphenoid sinus by fluid or gas of decomposition is capable alone of causing the same character of headache.

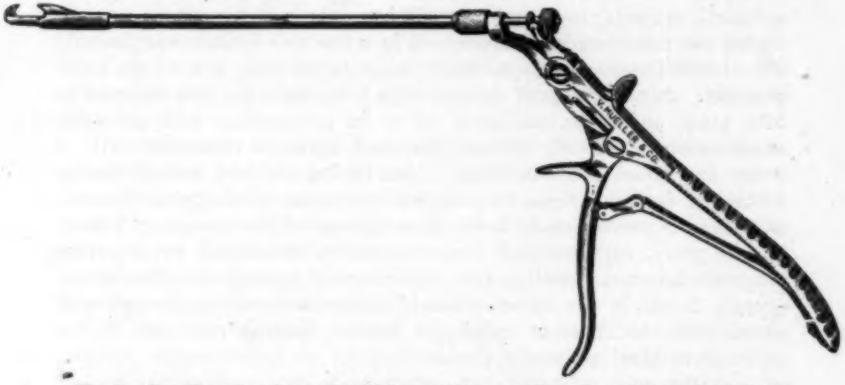


Fig. 3.—Casselberry's spheno-ethmoid bone-cutter—an adaptation of the author's bronchoscopic pin-cutter, to fill the need of an instrument with power and rigidity to cut bone at long range in narrow quarters and leave room for light and vision. A tubular punch forceps in the form of a double sharp hook from the grasp of which bone cannot slip and whose bite, though narrow, is clean cut. For the primary puncture of a cell, its distal blade serves as a Hajek hook but on closure it cuts instead of tearing away the cell wall, being capable of excising several pieces in succession without withdrawal to detach each piece. It is intended to be supplemented by instruments of larger grasp when space has been made available.

Asthma.—The relationship of nasal accessory sinus disease to bronchial asthma, though manifested in varying degree, is now accepted as an actual clinical fact. Not that they figure directly as cause and effect, but rather, both of them, as resultants of the same systemic dyscrasia, even the nasal complication showing signs of a deeper origin and significance than that merely of a local reaction to infection. In spheno-ethmoid asthmatic subjects I have repeatedly observed a rapid formation of an edematous or polypoid exudate so profuse as to seem entirely disproportionate to the local cause—traumatic or other nasal irritation—unless it were promoted by systemic conditions. The day after an operation for multiple polypi, for instance, one would find the nostrils again packed with what looked amazingly like a fresh growth of

polyps, sprung up over night. Being semi-translucent and lobulated, this exudate is not like that of cauterization or diphtheria. It separates usually within a few days, the patient perhaps reporting that he has blown out what he thought were more polyps; but it is liable to persist for weeks and to appear so much like sessile polypi as to raise the question of its possible transformation into polypi. Potassium iodid tends to limit its formation. The tendency to exudative processes in the intestines, as well as in the nose, which characterizes asthma[8] also indicates a constitutional proclivity which may be termed an exudative diathesis and regarded as identical, at least in part, with the asthmatic dyscrasia. Nevertheless, putting the nose in a healthful condition eliminates a potent aggravating influence, and is followed, at the least, by amelioration of the asthma and, at the most, by such a reduction in the number and severity of the paroxysms that no more than a residual asthmatic tendency remains.

About one-third of the cases of suppurative sphenoiditis were asthmatic subjects; in several polypoid hyperplasia in the spheno-ethmoid region was a dominating feature, and in a few this locality was the only site of attachment of polyps, which, when large, hung toward the naso-pharynx. A recurrence of asthma after long abeyance was observed to take place under the excitation of or in conjunction with an acute exacerbation of chronic sphenoiditis; and again in connection with a severe first attack of sphenoiditis. Also, having observed that the degree of benefit derivable from the surgical treatment of the nasal features of asthma is proportionate to the thoroughness of the operating, I have, of late years, supplemented former operative treatments by removing residual clusters of small polypi and polypoid hyperplasia when subsequently found in the spheno-ethmoid sulcus and within the sphenoid sinus, with the effect of gaining a further distinct reduction in the patient's residual asthmatic tendency.

TREATMENT

The dominant principle of the treatment of suppurative sphenoiditis is free drainage, or, if not free, then as nearly so as may be consistently possible. In this alternative lies the difference between the palliative and radical treatment and the distinction between a dangerous and a safe operation.

The palliative treatment, which for the milder cases may prove to be curative in a limited sense, is based on the principle that if the posterior nares and naso-pharynx be kept clear of accumulated sphenoid discharge, the catarrhal symptoms and irritation exterior to the sphenoid outlet will tend to subside and the sphenoid drainage be improved in so far as swelling of the nasal tissue outside the sinus had impeded it. The same principle must have pertained to the amelioration of the symptoms secured in the past through restoration of nasal space by means of cauterization of the middle turbinal, middle turbinectomy and correction of septal deformities, for it is certain that in the years before

8. von Strumpell: Medizinische Klinik.

we gave consideration to suppurative sphenoiditis as the cause, our treatment of the symptoms was not wholly fruitless. As the cleansing process must be long and regularly maintained, it is essential to instruct the patient in the self-application of a simple but efficient method—requirements which, in this affection, are met by the post-nasal type of douche rather than by an atomizer or anterior douche; and by an alkaline vaso-constrictor solution, weak enough to be devoid of irritating effect, rather than by strong astringent or antiseptic fluids; e. g.:

℞

Menthol	0.2
Olei Eucalypti	1.
Olei Gaultheriæ	1.
Sodii carbonatis (not bicarb.)	4.
Sodii boratis	4.
Glycerini	30.
Aquæ dist., q. s. ad	100.

M. et Sig. Dilute by adding one teaspoonful to one-half glass of water (1 to 25) for use as a post-nasal wash.

Irrigation of the sinus, already described as a diagnostic test, is serviceable as a remedy, especially during acute exacerbations. The exhaust method of evacuating the sinus is simpler but not always as efficient.

The radical treatment is necessarily surgical and the approach to the sphenoid sinus may be made by one of three routes:

1. Through the natural channel of the nose, augmented in breadth by middle tubinectomy—the preferable route when disease of the spheno-ethmoid group is the major element.

Twenty-four intranasal operations, all by this route, on seventeen private patients have embraced the following:

(a) Operative enlargement of the osteum sphenoidale by curette or evulsor, supplemented by removal of polyps and polypoid tissue from the sphenoid sinus and other parts—five times on four patients, on account of asthma, recurrent bronchitis and catarrhal symptoms.

(b) Excision of a portion of the anterior sphenoid wall, but without embracing the post-ethmoid cells—four times on three patients for similar reasons.

(c) Reasonably complete Hajek operation which consists of ablation of the post-ethmoid cell and removal of the party wall between it and the sphenoid, thus providing permanently the largest feasible outlet for the sphenoid sinus—seven times on four patients, respectively, for mental daze, asthma with polyps, atrophic disease and headache.

(d) Partial Hajek operation nine times on seven patients, for similar and additional reasons, including headache, migraine, exophthalmos and post-nasal discharge.

Although occasionally I have deemed it expedient to operate under general ether narcosis, as a rule only local anesthesia is employed, which obviates the need of a time limit. The patient, after realizing that he is not being hurt, sits contentedly, somewhat reclining, on a table which is adjustable, at need, for the recumbent position without interruption of

the operation. Free immediate hemorrhage, encountered but once, from a septal branch of the naso-palatine artery which crosses the sphenoid wall, was controlled by solid nitrate of silver and temporary compression, secondary hemorrhage being prevented by the use, always, during the first night, of the author's rubber tampon.

Several classed as "partial Hajek operations" were, in fact, completed to the extent designed, not having been intended for typical Hajek procedures. In others, however, the operating was discontinued short of the desired extent in obedience to a self-imposed rule of safety, which is, to safeguard the near-by vital centers by stopping the operation whenever, by confusion or disappearance of surrounding landmarks, the precise anatomical relations can no longer be determined; for, not only are the cells and other guiding features of the ethmoid labyrinth subject to variation in conformation and arrangement, but some of them will have been removed in the course of the operation, which lends a different aspect to the rest. Resection of the middle turbinal is necessarily the first step, and the bulla, with other anterior ethmoid cells, if found diseased, are also eliminated on the way to the posterior group, and then the convex median wall of the group of post-ethmoid cells comes into view. I call it the back-bulla, as keeping this resemblance in mind is an aid in distinguishing it in the foreshortened perspective from a ledge-like remnant of the middle turbinal. The post-ethmoid group is dealt with as one structure, for one cannot know, nor is it essential to know, how many individual cells it may contain, until it is laid open, which for the purpose classed as a "reasonably complete Hajek operation" involves removal of approximately the lower median quarter-section of the whole group, together with a corresponding portion of the spheno-ethmoid party wall, thus forming an aperture into the sphenoid sinus capable of further enlargement. When the antrum is jointly affected and has not previously been operated on, it can be freely opened through the middle meatus as an incident of the same operation, with the reservation, however, that additional drainage through the inferior meatus may be required.

The second and third routes to the sphenoid sinus are not under present consideration, but may be mentioned, as follows:

2. Through the mouth and upper jaw, across the antrum to the sphenoid recess in the nose and thence to the sinus—preferable, among other conditions, when disease of the antrum is the major element and of a nature to indicate this particular operation.

3. Through the orbit and adjoining side of the external nose—preferable among other conditions when the frontal sinus is the major element.

I have experienced no accidents nor any harmful effects whatever consequent upon the spheno-ethmoid operation, a fact attributable to the "rule of safety," together with the avoidance of hurry and display. Nor has observance of the rule impaired the final results, which have averaged fully up to expectations; for when necessary the main operation has been supplemented by minor measures during the after treatment.

What are the end-results or to what extent will the sphenoid wall and post-ethmoid cells be regenerated to reassume their poor estate? In the exudative diathesis, to an astonishing extent, so that three months later one might scarcely know the cells had been opened. Therefore, not infrequently one must excise the equivalent of another quarter section or more; but eventually they do remain widely open, and when the anterior group has been jointly operated on, the remains of the cells form a vaulted nasal roof as if supported by a series of Gothic arches. It is not always essential to the purpose to attain this ideal result, but by watchfulness and persistency it always is attainable.

Are the patients then cured? If cure shall be defined as a total suppression of disordered secretion and other symptoms, it can be said to follow only when the focus of infection is exceptionally limited and accessible. But to approximate ordinary conditions, a less rigid standard of cure will suffice, few individuals being altogether free from disordered secretion. If, then, nine-tenths or more of the distress and disability incidental to the post-nasal discharge be eliminated, material mitigation of the asthmatic feature afforded and the headache, with possible mental deterioration, wholly remedied, it amounts to a practical cure. In this sense a large majority of spheno-postethmoid sinus infections of the attenuated types specified are curable by the methods described. Arduous, painstaking effort and perseverance may be requisite, but the results are well worth while.

LAW AND MEDICINE *

C. H. BURTON, LAWYER,
EDWARDSVILLE, ILL.

May 29, 1877, the first act to regulate the practice of medicine in the State of Illinois was passed and took effect July 1, 1877. Prior to that time any one who desired to do so could practice medicine, or attempt to do so, without any legal regulation or restraint and with no other qualification than that he had heard the "call" to practice.

The act referred to provided how persons might be admitted to practice medicine, as follows:

BE IT ENACTED BY THE PEOPLE OF THE STATE OF ILLINOIS REPRESENTED IN THE GENERAL ASSEMBLY; That every person practicing medicine, in any of its departments, shall possess the qualifications required by this act. If a graduate in medicine, he shall present his diploma to the State Board of Health, if such Board of Health shall be established by law or Board of Examiners herein named, for verification as to its genuineness. If the diploma is found genuine and if the person named therein to be the person claiming and presenting the same, the State Board of Health, if such Board of Health shall be established by law or the Board of Examiners, shall issue its certificate to that effect signed by all the members thereof, and such diploma and certificate shall be conclusive as to the right of the lawful holder of the same, to practice medicine in this State. If not a graduate, the person practicing medicine in this state, shall present himself before said

* Read before the Madison County Medical Society, Sept. 1, 1911.

board and submit himself to such examinations as the said board shall require; and if the examinations be satisfactory to the examiners, the said board shall issue its certificate in accordance with the facts, and the lawful holder of such certificate shall be entitled to all the rights and privileges herein mentioned.

Examinations may be in whole or in part in writing, and shall be of an elementary and practical character, but sufficiently strict to test the qualifications of the candidate as a practitioner.

The State Board of Health, if such Board of Health shall be established by law, or Board of Examiners may refuse certificates to individuals *guilty of unprofessional or dishonorable conduct*, and they may revoke certificates for like causes. In all cases of refusal or revocation the applicant may appeal to the body appointing the Board.

The penalty for practicing medicine and surgery in Illinois without complying with the provisions of the act was a fine of not less than $50 nor more than $500, or imprisonment in the county jail for a period of not less than thirty days nor more than 365 days, or by both such fine and imprisonment for each and every offense. But it was expressly provided that the provisions of the act did not apply to those who had been practicing medicine for ten years within the state.

The Supreme Court of Illinois, in the prosecution of one George J. Williams of Cook County, for practicing medicine without being licensed, sustained the Act and held it was constitutional in the following words:

Within the regulation of the practice of medicine must necessarily fall the right to determine, or to provide means for the determination of, who may lawfully exercise the right to practice medicine, and to establish such rules as shall determine what shall and what shall not be regarded as legitimate practice of the profession. The Statute was passed to *protect the health and promote the welfare of society, and to protect it from imposition and fraud.* The purpose was to prohibit and punish fraud, deception, charlatanry and quackery in the practice of medicine,—to prevent empiricism and bring the practice of medicine under such control that, as far as practicable, *the ignorant and unscientific practitioner shall be excluded.*

Again, in the case of the People vs. Blue Mountain Joe, the Supreme Court sustained the Act as constitutional. The court said:

It is the common exercise of legislative power to prescribe regulations for the securing the admission of *qualified persons* to professions and callings demanding special skill; and nowhere is this undoubtedly valid exercise of the police power of the State, more wise and salutary, and more imperiously called for, than in the case of the practice of medicine.

The practice of medicine and surgery may be legally controlled in order *to promote the public health and welfare of society,* and the primary object of the law is not to favor the doctors, but to protect the patients.

Since the act of 1877 was passed, various amendments have been made to the law for the purpose of improving it and raising the standard higher and higher from time to time, until now the qualifications of those practicing medicine in the State of Illinois are as follows:

LATEST ACT RELATING TO REQUIREMENTS OF APPLICANTS FOR LICENSE TO PRACTICE MEDICINE IN THE STATE OF ILLINOIS

Approved May 29, 1911; in force July 1, 1911

The State Board of Health shall require that every applicant for a license to practice medicine and surgery in all their branches, in the State of Illinois (excepting only those physicians who may be entitled to a license under section 3a of the Act to which this act is an amendment) shall present:

1. Proof satisfactory to said board that he is a graduate of a medical college in good standing, as may be determined by the state Board of Health, and

2. Pass, before said board, an examination embracing those general subjects and topics, a knowledge of which is commonly and generally required of candidates for a degree of doctor of medicine, by reputable medical colleges in the United States:

3. *Provided*, that the State Board of Health, may, in its discretion, admit to examination a student who has completed, in a medical college determined in good standing, the course of instruction required by the rules of said board in medical colleges determined in good standing, and who has passed the examinations of said college, but has not received a diploma;

4. *Provided*, further, that the said medical college shall require as a prerequisite to graduation, a course of study extending over at least five calendar years.

5. And if said student pass the examinations of said board it may issue to him a limited license authorizing him to practice medicine and surgery in a hospital approved by said board and in no other place whatsoever in the State of Illinois.

6. Which limited license shall remain in effect for a period not exceeding eighteen months from the date thereof, and the State Board of Health may then issue to the applicant the regular permanent license of the board without further examination or fee, on the condition that the applicant present a diploma from the medical college in which he had completed a course, as prescribed by the rules of said board, previous to the issuance of the limited license hereinbefore mentioned, and otherwise complies with the requirements of the board and with the provisions of the Act to which this Act is an amendment.

The law also provides that certificates may be refused or revoked.

The State Board of Health may refuse to issue certificates provided for in this Act to individuals:

1. Who have been convicted of the practice of *criminal abortion.*

2. Or who have *by false or fraudulent representation obtained or sought to obtain practice in their profession.*

3. Or by *false or fraudulent representation of profession, have obtained or sought to obtain money or any other thing of value.*

4. Who advertise under names *other than their own.*

5. Or for any other *unprofessional or dishonorable conduct,* and the board may revoke such certificates for like causes.

Those who are regarded as practicing medicine are defined as follows:

"Any person shall be regarded as practicing medicine, within the meaning of this Act, who shall treat or profess to treat, operate on, or prescribe for any physical ailment or physical injury to or deformity of another;

Provided, That nothing in this section shall be construed to apply to the administration of domestic or family remedies in case of emergency, or to the laws regulating the practicing of dentistry or pharmacy. And this Act shall not

apply to surgeons of the U. S. Army, Navy or Marine-Hospital Service in the discharge of their official duties, or to any person who administers to or treats the sick or suffering by mental or spiritual means, without the use of any drug or material remedy."

The penalty prescribed for practicing medicine or surgery or treating human ailments in Illinois without a certificate issued by the State Board of Health, as provided by law, is a fine in the sum of $100 for first offense, and $200 for each subsequent offense, same to be recovered in an action of debt, in a court of competent jurisdiction.

Any person filing or attempting to file as his own, the diploma or certificate of another or a forged application of identification, shall be guilty of a felony and on conviction shall be subject to such fine and imprisonment as are provided for the crime of forgery.

On conviction of either of said offenses as a part of the judgment, the court may order that the defendant be committed to the county jail of the county until the fine and costs be paid, and on failure to pay the same the defendant shall be committed under the order of the first offense not more than thirty days, and for each subsequent offense not more than ninety days; the right of appeal from the decision of the lower court is granted to the person charged with illegally practicing medicine and also to the State Board of Health.

The law of the State of Illinois has set a high standard for the qualifications of those who would practice medicine, from the legal point of view, but from the standpoint of the medical profession, the man who merely comes up to the standard of the law, who is only able to pass the examination and tests provided for all who would practice medicine, is but a novice, stands at the foot of the ladder and has merely begun the work which may make him a most useful citizen and benefactor of mankind.

The doctor's ideal should be high, for to a large extent the welfare of the community depends on his knowledge, skill and devotion to duty. While he deals primarily with the human body, yet his work directly and materially affects the mind and to a large extent the soul of his patient. He should be well equipped and thoroughly devoted to his work in order to accomplish the beneficent results contemplated by the law.

As the law permits no one but a doctor to practice medicine and grants to him high privileges and exempts him from many of the ordinary duties of citizenship, it likewise imposes corresponding duties and obligations on him.

Recognizing his special qualifications to speak on subjects pertaining to the body and mind of man, the law permits the doctor to speak as one of authority, as an expert on questions involved in legal and human affairs; *his word is the law* in most insane cases, personal injury and physical and mental disabilities, generally.

If the doctors of a community pronounce a case to be one of small-pox, yellow fever, cholera or the like, and they declare a quarantine necessary, without trial by court or jury, the law accepts the judgment of the doctors and enforces their judgment by its strong arm, the police, the

sheriff and all his power, and if need be with the military arm of the state and nation.

Our government is based on a written constitution, prepared by able men, scholars and statesmen, whose necks had felt the heels of tyranny, and so wisely provided checks against the encroachments on their liberty by the government; and so they declared that no one should be deprived of life, liberty or property without due process of law, and for that purpose established courts, high and low, great and small, but always with a limitation of their powers, and preserved the right of the individual to be tried by a jury when charged with a crime. Experience has taught that all laws and ordinary safeguards must be suspended and temporarily held in abeyance in case of emergencies, such as epidemics, which occasionally afflict the people of our country. The law of overruling necessity then applies and into the hands of the doctors temporarily consigns the powers of the court and juries. He then holds in his hands the powers of the state, the health, lives and welfare of the people; but to the great credit of the medical profession it can be truthfully said that the doctors of this country have always promptly responded to the call of duty and have performed their work faithfully, heroically and well, in every crisis which we have encountered.

Every great epidemic has developed great doctors, and they have shown as high qualities of bravery as our great heroes of the Army and Navy. No great army could long remain in fighting trim if it were not for the sanitary precautions and provisions made by the medical staff, and many lives are saved after battle by the aid of the surgeons and their staff of assistants.

The greatest material work ever attempted by any nation is the digging of the Panama Canal; the French failed in its undertaking and squandered many millions of dollars, largely because it failed to send a corps of experienced physicians to make the Isthmus of Panama sanitary before it sent its army of engineers and working men there to dig the canal. The United States, profiting by the mistakes of the French, spent many months in the work of sanitation on the Isthmus, before it began the physical work of digging the canal, and to the doctors belong the credit of rendering the canal as healthful, according to statistics, as the city of New York.

But it is not in a large way and on a great scale, but rather in the private and more humble walks of the profession that the doctor performs his greatest services.

The doctor being licensed to practice his profession by the state, becomes in a sense an officer of the state, and like the members of the bar, may be required to give his time and talents for the benefit of the state, and so the most eminent physician may be called to testify in behalf of the people of the State of Illinois in the most important criminal case, and for his services he can only legally demand the same fees that the law allows the ordinary witnesses. To the active practitioner of medicine this may seem a very great hardship, but when he considers the fact that the state has conferred exclusive privileges on him, he will readily under-

stand and appreciate his duty toward the public to aid in the promotion of justice and insure the peace and good order of society. In a recent case the Supreme Court held that it was a contempt of court for a physician to refuse to testify and answer questions calling for his opinion, on the ground that special compensation had not been paid nor assured to him.

One of the serious grounds of criticism of the medical profession grows out of the practice of some experts who testify only on the side of the largest fees and whose conduct causes them to be generally charged with being controlled in their judgment by sordid financial interest. The criticism is not entirely without foundation, but in most cases where reputable physicians are called as witnesses, their testimony is most truthful, reliable and dependable and based on their experience and that of eminent men of their profession. The courts are generally materially assisted by the members of the medical profession in upholding the law, administering justice and punishing criminals.

It is not in the larger and more heroic fields of action—"the scenes of war and pestilence"—where the average doctor is seen at his best and where his greatest work is done. *It is in the quiet sick-room of the every-day patient* where the doctor does his greatest work, *often unnoticed, sometimes forgotten and frequently unpaid.* The general health of the community largely depends on the intelligence, ability and devotion to duty of the medical fraternity.

The law wisely does not require impossibilities of doctors, but it does demand that he bring to the case in hand that degree of knowledge, skill and care which a good physician and surgeon would bring to a similar case under like circumstances. He must not treat a patient as a quack or unlicensed physician might treat one; he must give proper treatment, for that is the object of the law which licenses the doctor to practice and forbids all others from so doing.

Where a physician in the treatment of a patient uses reasonable skill, he cannot be held liable, although the result of the treatment is not as favorable as the patient might have anticipated.

Where the patient desires or consents that an operation be performed and unexpected conditions develop or are discovered in the course of the operation, it is the duty of the surgeon, in dealing with these conditions, to act on his own discretion, making the highest use of his skill and ability to meet the exigencies which confront him, and in the nature of things, he must frequently do this without consultation or conference with anyone except perhaps other members of his profession assisting him. Emergencies arise, and when a surgeon is called it is often found that some action must be taken immediately for the preservation of life or health of the patient, where it is impracticable to obtain the consent of the ailing or injured one or anyone authorized to speak for him. In such an event, the surgeon may lawfully, and it is his duty to, perform such operation as good surgery demands, without such consent.

But where the emergency does not exist, the consent of the patient is a legal prerequisite to an operation where the patient is in possession of his faculties and well enough to consult about his condition without dangerous consequences to his health; where no emergency exists, making

it impracticable to confer with him, or requiring immediate action for the preservation of life and limb, the consent of the patient must be obtained. A surgeon may not perform a major operation on a patient under ordinary conditions without the consent of the patient, and the Supreme Court of Illinois sustained a judgment against the doctor who removed the ovaries and uterus from a woman without her consent and without the consent of her husband, she being mentally afflicted so as to be incapacitated to give her consent.

A physician should not only be skilled in the practice of medicine and the performance of surgical operations, but he should be the highest and best type of man, and he should be the exponent in his professional and private life, of all that is moral and upright and that tends toward the higher life. Owing to the sacred and confidential relations which exist between physician and patient, he holds within his keeping the honor and reputation of many persons. And a man who deliberately violates that sacred trust is unworthy to practice medicine within or without the State of Illinois.

The object and aims of the Madison County Medical Society should be to constantly raise the standard of the medical profession so that the greatest possible good may be accomplished by the physicians and surgeons of this community. And in your noble work properly and faithfully performed, you are sustained by the law and have the support, sympathy and good will of the members of the legal profession and the community as a whole.

DISCUSSION

THE PRESIDENT: Discussion by Mr. Morgan Le Masters.

MR. MORGAN LE MASTERS, Granite City: *Mr. President, Gentlemen of the Medical Society of Madison County:* Some few weeks ago your secretary appeared in my office and I pledged him that I would be here today, and I am here.

I asked Mr. Burton just before he read that excellent paper to you what we, who were to discuss the matter, were supposed to do, and he said that he presumed, to save him from the knives of the physicians and surgeons who would be here.

First, before referring to any point brought out in this paper. I was made to think about many things that I have read in the papers about the American Medical Association and the League for Medical Freedom that were in conflict in Washington, D. C., in the United States Senate, when Senator Owen, of Oklahoma, introduced a bill in the Senate for the purpose of creating a department of health in the Federal Government, and as I understand it, that bill was made up professedly for the American Medical Association, and was promoted by that association. On the other hand there is an organization in the United States somewhere called the League for Medical Freedom.

Now, of course, the American Medical Association with its officers and its power can reach up to the American Congress and there through its power create laws that will reach down into Madison County, and every County in every State in the United States, and affect you men in your property and in your profession. And it behooves, that in your association and in your professional work, you keep a careful eye open upon what is being done over yonder and whether or not there are laws being enacted there for the purpose of benefiting a certain school of medicine. Now I don't know whether you are all of one school here or not, I don't know about that, and it may be that you are not. There are schools and schools of medicine as I understand it in this country and so may we all very

prudently say, what Shakespeare once said, "there is nothing good or bad except thinking makes it so." I believe that there is good in every school of medicine, that is they have some good points. The Great Healer and the Great Teacher said one time, the truth will make you free, and you men who practice medicine, if you get to the truth of the laws of the human anatomy or the human body, and administer that truth, why the truth will free you. But I am just putting this in now that you may study carefully those laws. I don't like that law of Senator Owen's. Some of you may have liked it, but it seemed to me that it was exclusive in one sense and inclusive in another. I would like to have you get a Congressional Record and read it; it would be worth your while to see how the American Medical Association and those promoting Federal Laws, come into the States and govern a board that is to determine what shall be, determine the cause of certain diseases and what is the best remedy for those diseases. Then that board with the hand of the government, will distribute all over this country under government expense, that literature that that particular board or that particular school may think is best for the public.

Law and medicine. What can the medical profession legally do in the promotion of law, in the helping to enforce the law. As you understand that paper you are clothed with power, exclusive power, and as the law imposes upon you certain obligations it also imposes certain demands that are equally important to the public.

Here is a physician who is called into a home as was suggested here a while ago and he pronounces it a case of smallpox or some other infectious or contagious disease that under the laws of the state or city requires some precaution that the physician is responsible for. That is, if you have labeled on the door smallpox, that you are not always willing, or some physicians are not always willing, that some other man shall go in there and help to determine whether that is smallpox or not. Now, I am not such an old man but that I remember that disturbances have arisen in the profession because of those cases. I believe that the meeting together like this, in these associations like you have to-day, getting in touch and association with one another, is helpful.

In many matters there is some jealousy, I wouldn't like to say this of many physicians, but in a great many of these cases where the public becomes interested, it becomes the duty of the physicians of the city, county and state to combine their efforts and their skill to help the public, to relieve the public, and forget all about their professional jealousies for that day.

The President: Mr. M. D. Powell, Attorney. Dr. Fiegenbaum: I know my friend Mr. Powell will pardon me for interrupting just at this time.

Gentlemen, Mr. Powell, who is about to address us is the son of the old-time veteran, Dr. Powell, of Collinsville. In coming to this county in 1870 I found Doctor Powell's office in Collinsville. A little later when I joined the Madison County Medical Society I found Doctor Powell one of the able, energetic and enthusiastic members of the old Madison County Medical Society. A man who was always on hand; always ready to promote the cause of the medical profession, and it is materially fit and proper that we have with us to-day a son of a member of the old guard.

The old Madison County Medical Society, as you know, encountered a storm, that storm soon became a gale in which the old-time Madison County Medical Society suffered a shipwreck. But when the ship went down, Doctor Powell was standing at the side, holding with one hand to the rail of the ship and with the other flying the flag.

MR. M. D. POWELL, Attorney, Collinsville. *Mr. President and Gentlemen:* In being called upon to address the Madison County Medical Association to-day it is indeed with the sincerest and keenest pleasure. I desire to thank your president and your secretary for the honor you have bestowed upon me. I consider it an honor for two reasons. First, because of the distinguished gentlemen who are present this afternoon to hear what I might have to say, for the excellent organization which I find they have, and of which I was unaware, and for the honorable profession which they represent. And secondly, because of the fact

that I am the son of a physician who was at one time a member of this association and with whom some of you gentlemen during his lifetime have mingled, I say I am very much honored this afternoon in being called upon to address this body.

I might not be able to confine myself to remarks in discussion upon Mr. Burton's paper inasmuch as I didn't know just exactly what points Mr. Burton would take up. But the subject, law and medicine, is indeed a very wide field and therefore I have selected one or two things upon which I will try to say something this afternoon.

While I was comparatively young, my father was in his prime in practicing medicine in this county and I can well remember how different little things, incidents that happened, lead me to believe that he was a man who was very well posted on the law, possibly as well posted as some lawyers are. It is probably due to the fact that the status of the physician of forty or fifty years ago was quite different from that of the physician of to-day. In those days the physician was the medical advisor and the general advisor of nearly every family into which he went to attend to the physical ailments. They told him their troubles; it didn't matter what it was, they told the doctor about it, and especially if it was in a small country town where there were no lawyers to consult. So, the doctor of yesterday was entirely different from the doctor of to-day, and some of them, usually in the small towns, found it necessary to act as the legal advisor to some of their patients to a certain extent. But to-day it is not as necessary for a doctor to know as much about law in that regard as it was then. Therefore I conclude that you gentlemen in order to succeed as physicians care only to know as to what the law is regarding the practice of medicine.

As to that point, I think one recommendation to you possible will be the best. That is, in your every-day practice, to familiarize yourselves as much as possible with the statutes of our state governing the practice of medicine. You can see the statutes, you can note and keep in touch with the statute laws of the State of Illinois and thereby be very well posted as to the law in which you are particularly interested as physicians. The position of the lawyer of to-day is quite changed in several respects from that of yesterday, or the position of forty or fifty years ago. Nearly all doctors as a rule engaged in a general practice, but to-day, I believe, you don't find that that is the case. Because of the number of fads, different isms, and patent remedies and things which interfere with legitimate practice of medicine, you are almost compelled to specialize upon some particular branch of the medical profession.

I don't want to go into a lengthy discussion of this subject this afternoon. I am satisfied that the gentlemen who have preceded me and those who are yet to come are eminently more qualified to take up the intricate phases of this question of the relation of law to the medical profession, and if I can only say one or two little things that some few of you might take away with you this afternoon and remember I shall feel well satisfied with my effort here to-day. I shall not discuss the higher and more intricate points relative to the subject, but will simply mention one or two of the common, every day things which a physician should bear in mind relative to the law.

One of the foremost of these common things is that he should keep his books, his accounts and his records in first class shape. There is no telling when any of you may be called to bring your books and records into court and offer them in evidence, and if they are in first class condition, you will undoubtedly find that the lawyer can use them to a much better advantage and that you will be well paid for using a little time each day or every few days in keeping your books and records in proper shape. One of the most distressing situations which a lawyer experiences is when he attempts to prove a certain fact, or certain set of facts, by means of a set of books, which are nothing but a conglomerate mass of figures and notes from which he cannot make head or tail. The physician if he desires to come into court and collect his just fees is required to introduce his books of original entry. These in particular are the ones I refer to that should be kept in first class condition. It may be that some of you have never come into

court for this purpose, for the purpose of sueing to collect some of your debts. I, of course, don't know how you feel about that question, but, I believe, it is a well known fact that a doctor has a larger number of bad debts on his books than any other man in business. I believe he loses more of his hard earned money than any man in business. And I believe it should be his duty, every doctor's duty, to try in so far as he is able, to discourage the practice of some to impose upon him for gratuitous services. When a man refuses to pay his just debts never hesitate to take him into court and make him pay what is properly due you. I believe the time will come when this certain class of people will be driven out. Of course, I understand, the doctor is not in a position to refuse his services to suffering humanity, but I believe that the physician should choose those who are worthy of his charity in bestowing his services gratuitously.

Another matter that I simply want to call your attention to for a moment is the appearance or demeanor when called into court. A physician may be called into court as a witness in a good many instances and under a good many circumstances. I think every man should, the physicians included, never allow anything at any time to induce him to deter for one moment, while under oath, from a statement of the truth and nothing but the truth. I have here a short article which I want to read which illustrates the position very clearly in which a physician was placed because he gave false testimony.

This is an article under the head of the "Cross-examination of the Perjured Witness." I believe you will find it interesting. During the lifetime of Dr. A. E. Ranney there were few physicians in this country who were so frequently seen on the witness stand, especially in damage suits. So expert a witness had he become that Chief Justice Van Brunt, many years ago, is said to have remarked, "Any lawyer who attempts to cross-examine Dr. Ranney is a fool." A case occurred a few years before doctor Ranney died, however, where a failure to cross-examine would have been tantamount to a confession of judgment, and the trial lawyer having the case in charge, though fully aware of the dangers, was left no alternative, and as so often happens where "fools rush in" made one lucky "bull's eye" that is perhaps worth recording.

It was a damage case brought against the city by a lady who, on her way from church one spring morning, had tripped over an obscure encumbrance in the street, and had, in consequence, been practically bedridden for the three years leading up to the day of trial. She was brought into the court room in a chair, and was placed in front of the jury, a pallid, pitiable object, surrounded by her women friends, who acted upon this occasion as nurses, constantly bathing her hands and face with ill-smelling ointments and administering restoratives, with marked effect upon the jury.

Her counsel, Ex-Chief Justice Noah Davis, claimed that her spine had been permanently injured, and asked the jury for $50,000 damages.

It appeared that Dr. Ranney had been in constant attendance upon the patient ever since the day of her accident. He testified that he had visited her some three hundred times, and had examined her minutely at least two hundred times in order to make up his mind as to the absolutely correct diagnosis of her case, which he was now thoroughly satisfied was one of genuine disease of the spinal marrow itself. Judge Davis asked him a few preliminary questions, and then gave the doctor his head and let him "turn to the jury and tell them all about it." Dr. Ranney spoke uninterruptedly for nearly three quarters of an hour. He described in detail the sufferings of his patient since she had been under his care, his effort to relieve her pain, the hopeless nature of her malady. He then proceeded in a most impressive way to picture to the jury the gradual and relentless progress of the disease as it assumed the form of creeping paralysis, involving the destruction of one organ after another until death became a blessed relief. At the close of his recital, without a question more, Judge Davis said in a calm but triumphant tone, "do you wish to cross-examine?"

Now the point in dispute—there was no defense on the merits—was the nature of the patient's malady. The city's medical witnesses were unanimous that the lady had not, and could not have, contracted spinal disease from the slight

injury she had received. They styled her complaint as "hysterical" existing in the patient's mind alone, and not indicating nor involving a single diseased organ; but the jury evidently all believed Dr. Ranney, and were anxious to render a verdict on his testimony. He must be cross-examined. Absolute failure could be no worse than silence, though it was evident that, along expected lines, questions relating to his direct evidence would be worse than useless. Counsel was well aware of the doctor's fertility of resource, and quickly decided upon his tactics.

The cross-examiner first directed his questions toward developing before the jury the fact that the witness had been the medical expert for the New York, New Haven, and Hartford Railroad thirty-five years, for the New York Central Railroad, forty years, for the New York & Harlem River Railroad twenty years, for the Erie Railroad fifteen years, and so on until the doctor was forced to admit that he was so much in court as a witness in defense of these various railroads, and was so occupied with their affairs, that he had but comparatively little time to devote to his reading and private practice.

Counsel (perfectly quietly): Are you able to give us, Doctor, the name of any medical authority that agrees with you when you say that the particular group of symptoms existing in this case points to one disease and one only?

Doctor: Oh, yes. Dr. Erskine agrees with me.

Counsel: Who is Dr. Erskine, if you please?

Doctor (with a patronizing smile): Well, Mr. ————, Erskine was probably one of the most famous surgeons that England ever produced. (There was a titter in the audience at the expense of counsel.)

Counsel: What book has he written?

Doctor (still smiling): He has written a book called "Erskine on the Spine," which is altogether the best-known work on the subject (the titter among the audience grew louder).

Counsel: When was this book published?

Doctor: About ten years ago.

Counsel: Well, how is it that a man whose time is so much occupied as you have told us yours is has leisure enough to look up medical authorities to see if they agree with him?

Doctor (fairly beaming on counsel): Well, Mr. ————, to tell you the truth, I have often heard of you, and I half suspected you would ask me some such foolish question; so this morning after my breakfast, and before starting for court, I took down from my library my copy of Erskine's book, and found that he agreed entirely with my diagnosis in this case. (Louder laughter at the expense of counsel, in which the jury joined.)

Counsel (reaching under the counsel table and taking up his own copy of "Erskine on the Spine" and walking deliberately up to the witness): Won't you be good enough to point out to me where Erskine adopts your view of this case?

Doctor (embarrassed): Oh, I can't do it now; it is a very thick book.

Counsel (still holding out the book to the witness): But you forget, Doctor, that thinking I might ask you some such foolish question, you examined your volume of Erskine this very morning after breakfast and before coming to court.

Doctor (becoming more embarrassed and still refusing to take the book): I have not time to do it now.

Counsel: Time! why there is all the time in the world.

Doctor: (No answer.)

Counsel and witness eye each other closely.

Counsel (sitting down, still eyeing witness): I am sure the court will allow me to suspend my examination until you shall have had time to turn to the place you read this morning in that book, and can reread it now aloud to the jury.

Doctor: (No answer.)

The court room was in deadly silence for fully three minutes. The witness wouldn't say anything, counsel for plaintiff didn't dare to say anything, and counsel for the city didn't want to say anything; he saw that he had caught the witness in a manifest falsehood, and that the doctor's whole testimony was dis-

credited with the jury unless he could open to the paragraph referred to which counsel well knew did not exist in the whole work of Erskine.

At the expiration of a few minutes, Mr. Justice Barrett who was presiding at the trial, turned quietly to the witness and asked him if he desired to answer the question, and upon his replying that he did not intend to answer it any further than he had already done, he was excused from the witness stand amid almost breathless silence in the court room.

After a ten days' trial the jury were unable to forget the collapse of the plaintiff's principal witness, and failed to agree upon a verdict.

Now gentlemen, I trust that the speakers who are to follow will do amply more justice to the subject than I can, therefore, I will close.

I thank you.

THE PRESIDENT: Mr. Boynton, of Alton.

MR. WM. P. BOYNTON: *Mr. Chairman and Gentlemen of the Medical Profession:*

It isn't often that we lawyers get a chance at you doctors in flocks, so to speak. We have been accustomed heretofore to take you one at a time on the witness stand, and by that panacea for all legal ills, Expert Testimony, endeavor to show that John Doe has been suffering from an exaggerated ego; or that Richard Roe was the luckless victim of brain storm.

Wherefore, it is a real pleasure to meet with you on this occasion. I am not at all like a certain young lady, who, on being asked for a kiss by a physician, demurred on the ground that she didn't want a doctor's bill stuck in her face. This meeting gives us the long sought for opportunity of acknowledging to the medical profession, the lasting obligation under which it has placed the members of the bar. If, as has been declared, gratitude is a lively sense of benefits to come, we are truly grateful to you men. The settlement of estates of deceased persons you know is one of the most lucrative branches of our practice. (Judge Streuber, and the rules of the Probate Court, to the contrary notwithstanding.)

I am told that some time after this eminent Judge had been elevated to the probate bench, a learned member of your profession, from Collinsville, presented a bill to his Honor against the estate of a deceased patient, and asked, "Do you wish to have my bill sworn to?" "No," replied Judge Streuber, "the death of the deceased is sufficient evidence that you attended him professionally."

It is said that one of the signers of the Declaration of Independence submitted an off-hand opinion that unless the said signers hung together, they might hang apart. Perchance that may in a sense be true of us, also. After all, there is much in the two professions to bind us together. Some of you may be surprised to know that the title of Doctor invented in the twelfth century was originally conferred upon one Irnerius, a learned Professor of Law at the University of Bologna. Thus, the first doctor was a doctor of law (which fact probably accounts for so many of our laws being in such bad shape). But it wasn't very long until our boasted title was borrowed for the benefit of the clergy, and the University of Paris allowed the celebrated scholastic theologian, Peter Lombard, to set sail on life's sea under the alias of Doctor of Divinity. Of course, the disciples of Hippocrates were not going to let the preachers reap where they had not sown, for in 1329 we find William Gasdenio coming to the front with the title you now hold. Doctor of Medicine. You ought to be proud of that title, it came from the legal profession. And let me say in passing, it is the first time on record, and will doubtless be the last, that the lawyers ever let anything get away from them. I can't understand it!

Next to the confusion of tongues on the plain in the land of Shinar, this indiscriminate conferring of the title Doctor has proved to be one of the greatest calamities of history. It were better for all concerned had the lawyers quit-claimed the title in fee-simple to the members of the medical profession, "with all the appurtenances thereunto belonging, to have and to hold the same, unto them and their heirs and assigns forever." No conveyancer has ever yet been able to perfect an abstract of title for the term Doctor.

The result is, that to-day, when a man is called a Doctor we know little and must learn much. He may be a dentist, a man who finds nourishment for his own teeth by pulling other people's out. He may limit his practice to the descendants of Balaam's beast of burden. He may appear on the public stage, night after night, and weave his mesmeric spells, at so much per. He may occupy a chair in some institution of learning, as a Doctor of Philosophy (whatever that may be). His sole mission in life may be the prescribing of salt water for sore shins, and yet we hear him called a Doctor. And on Sunday, we may hear him thunder long and loud, calling sinners to repentance; for it was a Doctor of Divinity, you recall, who first filched from us our good name, which on the authority of the great poet, "not enriches him, but makes us poor indeed."

This misleading term of Doctor is truly an empty name, signifying nothing. A story is told of the Rev. Dr. Channing and his brother, a physician, who at one time both lived in Boston. A countryman in search of a divine called at the physician's door. "Does Dr. Channing live here?" "Yes, sir." "You must have altered some since I heard you preach? Certainly you are the Dr. Channing that preaches, aren't you?" "Oh, I see you are mistaken. It is my brother who preaches. I am the doctor who practices."

Hippocrates, the Father of your profession, was a great believer in the Law of Nature, and considered, in common with many of you, that it contributed to the general happiness of mankind; but "it is the nature of the law," declares some unkind critics, "to contribute only to the happiness of the attorneys."

We professional men, aside from being continually broke, have many things in common. We all make mistakes. With this as a basis some wag has asked what is the difference between a doctor's mistakes and a lawyer's mistakes? Answer, twelve feet. When a doctor makes a mistake they put a man six feet under the ground; alas, when a lawyer makes a mistake they suspend his victim six feet above the ground. The difference, you perceive, is twelve feet. Then again, it is not to be wondered at that doctors and lawyers alike, dealing daily as they do with such obstruse problems, as, for instance, collecting unpaid fees, etc., should become more or less absent-minded. I well remember an example of this which occurred in Alton some few years ago. A noted physician of that city was calling upon a gentleman who had been ailing for some time, and put a fee into the patient's hand, and took the medicine himself, which he had prepared for the sick man; he was not made aware of his mistake until he found himself turning ill and the patient getting better. They say that a Granite City lawyer was so absent-minded once that he paid his grocery bill the first time it was presented. (I think it was Judge Bandy, but I am not certain.) That was nearly as bad as the doctor in Edwardsville, who in making out a certificate of death some time ago to file in court wrote his name in the blank reserved for cause of death.

I make bold to assert, however, public opinion to the contrary notwithstanding, that most lawyers and the majority of doctors are honest and proficient men. It is the exception that proves the rule. And let me say right here that it was a rather mean remark Doctor Fiegenbaum made to Dan Williamson the other evening, when they were out at a social gathering. The hour was growing late, and Dan, pulling out his Waterbury watch, said, "Come, Doctor, it's ten o'clock; I think we had better be going for it's time honest folks were at home." "Well, yes," replied Doctor Fiegenbaum, with a twinkle of his eye, "I must be off, but you needn't go on that account." Then there is that unthinking critic who declared that a pig was a good subject for doctors to experiment on, as it could be killed first and cured afterward.

We are told that on one occasion Dumas visited Dr. Gistal, a celebrity of Marseilles. After dinner the Doctor brought out his album and requested the noted novelist to write in it. Dumas took the book and wrote, "Since the famous Dr. Gistal began to practice here they have demolished the hospital," "Flattery," cried the delighted Doctor. "And," continued Dumas, "on its site made a cemetery."

And then you recall some months ago, when "Tom" Williamson, he of the fog-horn-voice, returned from the Woodmen Convention at Buffalo. Tom got

his complexion put on the bum out east, and when he reached home he called his doctor to see why this was thusly. Tom's wheels seemed to be a bit out of gear, for he kept saying, "Mister Chairman, I move the nominations be closed." Mrs. Williamson became alarmed and said, "Oh, Doctor, Tom seems to be wandering in his mind." The Doctor, who knew Tom pretty well, replied, "Don't let that worry you, Mrs. Williamson, he can't go far."

We may laugh at the doctors, we may ridicule the lawyers, and yet, with all jokes aside, these two professions, the followers of Hippocrates, and the descendants of Lycurgus, Solon and Blackstone, stand out preeminent as benefactors of mankind. Where, indeed, shall we search for those who have done more for their fellow men? From the time that might made right, and the rule of he may keep who can was the sole law of human conduct; when the witch doctors and the medicine men, with their ceaseless noise and din, tried in vain to frighten away the devils of disease, down through the centuries, the doctors and the lawyers have struggled for the amelioration of human misery, and indeed the prolongation of life itself. Step by step have we advanced in this victorious march against disease and barbarism. With your learning and your skill you have taught us that "he whose reason totters on its throne" should be treated as one who is ill, not shunned as an outcast. And we in turn, with our laws, have safe-guarded those who are thus unfortunate. So far we have maintained that if one is capable of having criminal intent, he may be guilty of crime; refusing to recognize the finer and more subtle distinction which you draw. And yet, it seems to me that you reason well when you contend that one may be partially insane, having the capacity to formulate a criminal intent, and still, through no fault of his own, lack sufficient power of self-restraint to forebear the commission of an act which he clearly perceives to be criminal. You have much to sustain your argument, that it is unreasonable and unjust to punish a human being for that which he does not have the power to refrain from doing. We lawyers fear just yet to conform to your theory, lest its adoption allow the guilty to go free. Let us hope, nevertheless, that the near future may see medical science so far advanced in its wonderful analysis of the human intellect that it will be able to determine without question the true from fictitious, the real from the assumed; then may we indeed take a step forward. Then may we hope through proper educational means to wholly prevent crime, which after all is the grand goal of all the criminal law.

I have often looked at that beautiful picture, copies of which adorn many of your offices, you call it "The Doctor." The scene is the interior of an humble cottage. On a rude couch of old chairs, a child lies stricken with disease. The mother, anxious and worn through endless days and nights of constant care, sits at a table, her face hid in her arms, the very image of despair. At her side, stands the husband and father, downcast and sad. The joy and the happiness of the home has fled, their little daughter is sick unto death. I turn from these heart-broken parents to the face of the little sufferer, where it seems that that mysterious thing we call life, must soon fade away. But wait! The end is not yet! I see at that child's side another face, the face of a solemn, thoughtful man, the doctor. He has done and is still doing all that medical skill can suggest. I see him await the crisis which shall determine whether or not his efforts have been in vain. With nerves steady, and mind alert, he watches the result.

Here, indeed, is a wonderful thought caught by the painter's brush. There is naught of gain or mercenary motive depicted here. The surroundings would indicate no great monetary compensation forthcoming for the services rendered. It shows us rather the man, whose foremost thought is that of duty, and whose mission in life is, first of all, to relieve distress.

I have often looked at that picture, the picture of "The Doctor," and thought it one of the most beautiful conceptions an artist ever portrayed. I see in it the thoughtful, intelligent face, the patient skill, and the watchful care that more than once, in the sad hours of sickness, has caused "the rainbow of hope to shine through the tears of grief." It typifies that class of men to whom you belong, my friends, and we lawyers in common with all others, bare our heads to the

members of that noble profession, whose skill, learning and unselfish devotion to duty has placed them in the very van of the world's mighty benefactors.

THE PRESIDENT: Mr. D. G. Williamson, Edwardsville.

MR. WILLIAMSON: *Mr. President, Gentlemen of the Meeting:*

I think it wrong to begin with apologies, but this time I am compelled to. I don't want you to be mistaken. I want to tell you now that I cannot hope to instruct you. I simply want to talk to the doctors a few minutes because a good many of them have talked to me. I think the first man I met on coming to this country was a doctor, and he rendered me material assistance, and I have met many of them since. I see many faces here that I have interviewed and if I should stick out my tongue at one of you it would not be in disrespect, it is simply by force of habit.

It has been said there is something in common between doctors and lawyers. That is true when I think each has a large and growing collection of family skeletons. We all have them on both sides, I mean of other people, that are in our confidences, and it is to the credit of both professions that there are so few of them that get away.

I don't know how many stories have been told this afternoon, but I will venture one, and if I am telling it again I will probably be stopped before getting far. It is with regard to the keeping of professional secrets.

A story is told of an able physician of good standing in a country town, who made up his mind late in life to go into politics. He decided to be a candidate for Mayor of his city on the republican ticket and so announced himself. When the members of the party heard of it there was consternation and surprise, and they went to him post haste and said to him: "Why, doctor, what are you doing? You are doing the wrong thing. This won't do, you are doing wrong. Why the party won't stand for it. You haven't been a man of any activity in politics around here. You cannot be elected, the people won't elect you. You ought to withdraw."

"So you think I ought to withdraw?" said the doctor.

"Why sure," they said, and he said, "I will, but hold on, I will run independent."

That they thought was a joke, a good joke, and they laughed. But some time after the men talked to him the joke came out. The day before the election the doctor published in a leading paper this card which said, "I am a doctor. I have been practicing in this county for thirty years. I know every man, woman and child in it. I am a candidate for mayor on the independent ticket, and I propose if I am not elected, to publish everything I know, of any man, woman or child in this city." Next day, after the poles were closed and the votes counted, they found that he had been elected by all but three votes and they were strangers who lately moved in before the election.

Now, that we have something in common, similarities, is a fact. By that I mean that the men in both professions have to secure the correction of evil by men, in the observation of law. The evil as you doctors will get it is the result of the violation of law, in your cases of natural law, of the physical laws that control either the parents or the children. In the case of the lawyer it is the result of the violation of the civil law which is the cause of the difficulty, and also his occupation, the act. Of course, natural law hasn't that. Understand in all these departments we are constantly discovering.

Civil law is said to be a creation of mankind. It is the sense of humanity gathered from the ages, and I suppose we cannot hope for centuries to come to reach the time when we will have practically perfect civil law. There is wrong and evil possible in all systems of the law that have been devised, and the best that the conscientious lawyer can do is to apply the law as he finds it, to take his client's case into his confidence, to do the best he can, and by the way, that is another similarity between lawyers and doctors. The only inducement is the personal relationship of confidence of the doctor to the patient and the lawyer to the client. You know the very inside of a man's thoughts when he comes to

you to consult about the matter, and the doctor knows about all those inside thoughts when he consults him and there is a confidence established that is not shown, that is, it is not shown often between persons in any other relation in life.

Now, then, the difference between the lawyer and the doctor is also illustrated in this way: A lawyer plies a case over painstakingly, he considers all the facts to be set out, that is his declaration and plea, and he uses his best means, effort and care to place his case on paper. He says to himself, what remedy shall I pursue? Shall I put this in case or trover? Shall I bring it in chancery or make it a law suit, and in what court? Finally he makes up his mind and he in haste files it and he gets in court and the result is favorable or otherwise, one of the parties taking an appeal. Up there in the Supreme Court they are. The appellant is complaining that the lower court ruled thus and so. Its contention could not be otherwise for the reason that in order to raise the question he should have proceeded along another course, in other words he made a mistake in following that line of action and the court shows his mistake. And they have with fulness and cruelty printed that and published it in a report, for posterity to read after we are dead and gone, but if a doctor makes a mistake in diagnosing some disease the tombstone reads just the same, there is no difference then—you have not that to contend with.

However, in speaking in this way, lightly, I cannot be misunderstood to have the least bit of disrespect for the profession that I believe to-day stands at the very forefront. Scientists of your profession have done more during my brief time than those of any other in the world. And they have directed their attention to the greatest thing in the world, which is man himself. Everything goes back to the higher order of creation. The doctor goes directly to that thing. The other men, the men of business would concern themselves with the material things, but the doctor's profession goes directly to the well-being, the mental well-being of the individual himself. His services are beyond comparison, there can be no comparison in them. And if he rescues a man from pain and suffering his compensation cannot be doubted. The man who constantly goes up and down in a community helping the suffering, aiding the afflicted and bearing other's burdens must, by virtue of that very fact, grow in his heart and in his mind. And in every community that ever I have known, and in any community where any of you have been, a physician takes the front rank. He is the man who has the confidence of the people; he is the man that is regarded, and properly so.

And with regard to where the name originates, or who was the father of the profession you may again point to this, that the greatest figure in history was known, or is known, for the past two thousand years, more by the acts which He did in healing mankind, and that it was the injunction which He laid upon his disciples when He left the earth to "go and heal the sick." And He also was a law giver and said, "render unto Cæsar the things that are Cæsar's."

THE PRESIDENT: Mr. Mallory Burroughs, Edwardsville.

MR. BURROUGHS: *Mr. President, Gentlemen of the Society:*

After all that has been said, and with one speaker to follow me, who is to speak on the same subject that is up for discussion, one would think that there is not much more to say, and I confess I feel very much like the toastmaster who replied to a remark made by one on the program after a banquet. The party rose near the end of the program and when it was very late in the evening and said, "Mr. Toastmaster, what shall I say, what shall I talk about?" The toastmaster replied: "About two minutes."

Unfortunately, to borrow a phrase that was used a little while ago, I was one of the drafted list and was compelled to volunteer on very short notice, so that I can assure you that I will not detain you many more than two minutes, if two minutes itself.

Now, as has already been intimated, the subject of law and medicine is indeed a broad field. They have many things in common and there is a point at which the two meet. There is also a point over which the two interlap. Now, I am going to speak of one of the phases of law in its relation to medicine which I think at this time should especially interest members of the medical profession.

I am sure that many of you are aware that in the larger cities there has grown up in late years considerable litigation known as mal-practice litigation. And I want to say while I think of it, before passing, someone has suggested jealousy in the medical profession and that member was modest enough to leave you with the impression that he didn't think there was very much jealousy in the medical profession. Now, I can vouch for that member and say that he is generally possessed of more actual facts than he indicated by his modesty. The fact is, gentlemen, that in most of the cases that have gone to the courts, many of those that have been tried and haven't reached the higher courts where opinions are written and reported, the fact is that in the background of most of those cases is an envious or jealous physician. It is a fact that many mal-practice suits have been instigated and urged on by some member of the profession who was jealous or envious of some other member. Now, it is because of that fact and because of the fact also that that feeling of jealousy among physicians increases and spreads that this species of litigation is working its way into the country. At the present time it is most prevalent in the larger cities. And I think it would not be out of place this afternoon to deliberate for a short time on mal-practice, and with that branch of medical jurisprudence, which concerns the contract which the physician makes with his patient.

Now, when one is sick and needs medical services and a physician is called, the question arises whether or not the physician must attend. I think almost I ought to apologize for asserting what the law is on that branch of the subject, because many of you no doubt know what it is. But there is in communities a popular belief that the physician by reason of his rights and privilege and the license which he gets from the state stands in the same situation as an officer of the court, an officer of some municipality or some sub-division of municipal government and that he must go when he is called. That, however, is not true as to the physician. The physician in that respect stands on a par with the groceryman or deliveryman or the lawyer, except when, as you understand, the lawyer sometimes acts as an officer of the court. But when calling a physician, unless he is under a special contract, as in the government service, and is required to do special service, he can go at the request of the patient or party summoning him or he may stay away.

But now, let us assume that the physician accepts the employment. Now, upon his acceptance of the employment and endeavoring to treat the patient he immediately sets in operation a series of contractual rights and presumptions of law as to his qualifications to treat the patient and perform his duty, and for a failure to do which he will render himself liable in damages for any injury that is sustained as a result.

Now, every physician who accepts a call to treat a person professionally contracts to do three things, all of which he must do faithfully and a failure to do any one of which would render him liable in an action for damages. The first is that he contracts that he possesses a reasonable degree of knowledge, skill and experience, that is the first. The second is, that in treating the patient he will exercise ordinary care and diligence, and the third contractual obligation is, that in cases of doubt he will exercise his best judgment.

Now, it isn't very much to say that he must possess a reasonable degree of knowledge, skill and experience, and must exercise ordinary care and diligence without going a step farther and defining what those terms mean. You can readily appreciate that to hold every physician to a standard of skill which would be manifested and which is practiced by the thoroughly educated specialists along particular lines of work, would be unjust and unfair to a great majority of our physicians and surgeons. On the other hand to demand no better standard than that which is manifested by the quack or the novice would be unfair to the patient. So the courts have, after many years of discussion of the subject, laid down the rule which is generally believed now to be the rule throughout the country; that is that we must take into consideration the locality in which a man is practicing and his facilities for keeping in touch with the advance stages of the medical profession and his opportunities for keeping up with it so to speak,

keeping pace with it. Now, from that is deduced this rule which is the rule that governs in that class of cases, that a physician when treating a patient will be held to possess that degree of knowledge, skill and experience and to exercise that degree of care and diligence which an ordinary man of the medical profession in the locality in question would exercise. That is laid down now as the standard.

Now, in reaching that, it is almost necessary to regard two rules which are always applied in cases of that kind. Hence, regard is had to the school of medicine to which one belongs, or from which one graduated. The next is the advanced stage of the profession. Those two things must be kept in mind all the time. For instance: if a homeopathic physician should be tried in a mal-practice suit or prosecution it would not be proper to summon in allopathic physicians to give their opinions as to whether or not the homeopathic physician had exercised proper care in treating the patient. We must go to the homeopathic school for expert testimony in a case of that kind. The authorities are almost unanimous in holding that the expert testimony must be confined exclusively to the field of the physician who is charged with mal-practice.

Now, again, the physician must follow established forms of treatment. No physician is allowed to experiment with a patient regardless of the patient's condition when he knows of some method of treatment that is reasonably sure of getting results. If a physician is confronted with the situation of a patient who is in a serious condition and he knows of one form of treatment that under ordinary conditions will give good results but he has heard of another method or has known some other physician to apply a method which has been productive of good results but he is not exactly sure as to how he should apply that treatment, if he takes the latter course and applies the treatment as to which he is in doubt and bad results follow, the physician in that case is liable, because the law holds every physician to a strict account, that they shall not experiment upon the lives or the health of their patients.

Then another thing, a physician's duty is not performed when he merely goes to a sick room and administers a treatment or gives a medicine. If the form of the malady is such as to cause or give rise to certain propensities which a patient would be expected to have at times, it is just as much the duty of the physician to warn the patient and to warn those in charge of him, as to those propensities so that they can be safeguarded against, and harm prevented. So then it is a part of the physician's duty to give proper instructions to be carried out after he leaves the patient to the care of some one else.

Now, another question frequently arises which I am sure many members of the medical profession have had to solve and which has never been given very much careful consideration in practice and that is, when or under what circumstances may a physician discontinue treating a patient? When we started out we proposed that the physician contracts to exercise that degree of care and diligence that is ordinarily exercised by those in similar localities, that is reasonable under the circumstances. Now, that includes a continuance of service and of treatment as long as it is necessary, and a physician, who for some personal reason or to gratify some desire or some whim or wish, leaves the patient when the patient is not in a safe condition, or in such a condition that he probably would not recover or get entirely well if left, would be liable, if he leave that patient in that condition without notice, if he did not leave some one in his stead.

Another question comes up frequently with physicians who desire to go away when they have patients that are sick, some that cannot be left to themselves, and the question arises, can they go away, and if so under what circumstances. The solution of that question and the one most usually adopted is to send a substitute.

Now, right here: many physicians have been held liable in damage suits by reason of the substitute they have sent. And the rule governing that class of cases is that if you send a substitute and hold out to the patient that the substitute is sent in your place and is to act in your behalf, then you yourself become as liable to the patient as the substitute himself. If, however, you recommend

some physician of standing and give the patient to understand that you are withdrawing from the case temporarily, then there is no contract of agency, and only the physician you recommended can be held responsible.

Now, in the list of patients which a physician treats there are often a number of so-called "charity patients" and the question arises whether or not a physician who receives no compensation for his service is held to the exercise of the same degree of care and is required to perform the same duties as to the patient who pays him compensation. The law along this line is extremely interesting for the reason that in its early history there were three degrees of care and three corresponding degrees of negligence that were applied in that class of cases. They were called gross negligence, ordinary negligence and slight negligence, and the same corresponding degrees of care. And the rule applied then in the early history of the law was that those who were paid an especially good compensation were held to the exercise of the highest degree of care; those paid only ordinary fees were held to the exercise of ordinary care, and those that were paid nothing were not absolutely free to exercise no care at all but they were only required to exercise slight care, and on a showing that they exercised only very slight care, if he received no compensation the physician could not be held liable. Our time is too short to trace the history of the development of the law in that class of cases. I simply want to state the present state of the law now, and it is, that a physician who accepts a call or calls upon the request of a patient to treat him, must exercise the same degree of care whether the physician receives one penny or whether he receives a thousand dollars. The law does not allow the poor and indigent to become the objects of experiment or cruel indifference. The law we have and live under to-day, and as it exists to-day, is that the compensation has absolutely nothing to do with the degree of diligence to be exercised, and the care to be exercised must be the same whether the patient pays you one cent or whether you receive a thousand dollars. But I think I ought to suggest in passing that in the practical working of that rule there is a difference, because the fact of whether or not a physician has performed his duty in a particular case is a question of fact, and as you know, such questions of fact go to the jury to be passed on; and there is scarcely any jury, there isn't a jury in the world that would hold a physician to the same degree of care where he is paid one cent or receives nothing, as they would when he receives a thousand dollars. So that is a case where the theory of the law and the practice of the law don't quite harmonize; the rule is one thing and the practice, by reason of the opportunity to work upon the sympathy of the jury or influence the instrumentality which will decide that fact, is another. The actual working of the law is not in fact, as the theory requires that it should be.

Another condition those of you in active practice and those whose practice is not so active, to a limited extent, frequently come in contact with, is that of contagious and infectious diseases. It becomes necessary often to leave a patient with a contagious and infectious disease and to go from there to the house of one who has not a disease of that character. I have known of physicians leaving the room of a person sick with a contagious disease and going to the room of another person that was not affected with that sort of malady. In a case of that kind the physician generally takes a great risk because if you carry the infection to the person—to the patient who hasn't it, and it is transmitted to that patient, that doctor is liable if he fails to disclose the information. If you apprise the patient that you go to see, that you have been where a contagious disease exists and the patient is then willing that you come near him or treat him, then the patient takes the risk in his own hands, but the doctor that comes without warning the patient and assumes to see the patient and treat him and leaves the germ which takes effect, or transmits the disease to the patient, that doctor then becomes liable if a suit should follow.

Now, there is one more point and that is; in case suits are actually brought, what defenses are open to the physician. Of course, the principal defense, and the only one that I shall simply mention in passing on, is that of contributory negligence. The contract which the law sets in operation is a mutual and reciprocal

contract by which the patient agrees to follow conscientiously the instructions left him by the physician and if he fails to do it and that failure contributes to the damage which he suffers, even though the physician himself might have been at fault, if there is negligence by both existing, the contributory negligence of the patient is a complete defense to the physician and the latter cannot be held liable.

Now, there is another phase of mal-practice. I have discussed the civil aspect of mal-practice, but there is also criminal mal-practice. There another, a very different rule applies than applies in the civil aspect of the case. However, it may be stated that a physician cannot be held liable in a criminal prosecution where there has been neither a wilful intention to injure somebody nor such a gross disregard of the health or life of the patient that it evidences wilfulness or a wilful intention or wilful neglect of duty. It is only in that case that criminal liability attaches.

It has been some little while ago that the question arose, I have heard it discussed in recent years but never very much at length, as to whether or not, where a physician sees a patient who is hopelessly ill, too sick to recover, hopelessly afflicted and suffering the most excruciating pain, and almost all rational minds are agreed that the patient is bound to die, and that there is no hope for him, and that prolonging his life would be just simply a prolongation of the agony, the question has arisen whether or not the physician in that case, in the exercise of sound discretion, may exterminate life. As to that question I apprehend no one is in doubt. It is discussed in an old case having gone up to the courts and it has been decided in this country and by the highest court of England that under no condition has a physician a right to exterminate life. It is only in the case where there is only one thing that can be done that might prolong life that the physician may do that which might result in death, but he must not do it for the purpose of taking life or with the intention of taking life.

I see I have been talking for some little time and as Judge Hadley is to follow I will conclude. There are several other phases of the question, gentlemen, that I would like to discuss but I feel that those I have discussed are those that most frequently come up in your practice; and if you will follow these ideas in the practice of your profession, if always, as has been suggested by several of the speakers, you will try to do that which your school and which your principles and your experience have sanctioned as the best course of action in that particular case, then, as far as you are concerned there need never be any fear or any apprehension of any mal-practice suits.

I thank you very much for your attention as well as for the privilege of addressing you.

THE PRESIDENT: We will be glad to listen to Judge Hadley of Collinsville.

JUDGE W. E. HADLEY, Collinsville: *Mr. Chairman, Gentlemen of the Medical Profession:*

I will assure you that I won't take up too much of your time; I know it is warm and you are tired.

There has been a great deal said this afternoon about that which is in common between lawyers and physicians. There is a great deal that may be said along that line simply because their callings in life are along the same lines. There are three professions in this world that I think are the greatest of any. First I will say is the ministry, and second I will say is the law, and the third is that of medicine. The calling of the minister, the lawyer and the physician to the upbuilding of society and the protection of society, are all along the same lines.

I am only going to touch some of the high places, gentlemen. I am going to call your attention to the relation between the physician and the Justice.

As was stated in Mr. Burton's paper, we have a written constitution in this state. And we have what is termed a republican form of government. There are three departments, the executive, the legislative and the judiciary. The legislative department enacts and makes the laws, the executive enforces the laws, and the judiciary interprets and administers the laws. Of all those departments now the judiciary department has the greatest powers. The judiciary depart-

ment can tie the hands of any of them, can declare any law the legislature might pass unconstitutional and void. It can only do that, when it is the law and when it is right and when it is just. They do that for the benefit of society, and that is also the calling of the physician.

Now, then, the greatest of those departments as I said before is the judiciary. You strike down the judiciary department of this country and anarchy will follow and overrun the country. The executive department would avail you nothing so far as the protection of society is concerned if the judicial department is not upheld and respected.

I am going to address my remarks to-day on the duty that the lawyer or physician owes to the court. A lawyer is an officer of the court, he is part of it and at times a physician, you might say, is a part of the court. Lawyers, ministers and doctors are all favored by the law. They are exempt from jury service. They are exempt from this, that, or the other. They all are exempt. Their privileged communications are exempt. They are exempt and you cannot force them to divulge anything a patient has confided in a physician or that a client has confided in a lawyer, or what a person has confided in a spiritual advisor. Now, then, for those exemptions you owe something to mankind, you owe something to society, you owe something to the court and to the law.

Sometimes physicians are very busy and it is a matter of life or death to their patients, and probably they inadvertently and unconsciously don't perform their duty, so far as the court is concerned, that they ought to. When a subpœna is read to a doctor, that subpœna has the same force and effect and it is as binding upon the physician, as if it is read to a butcher down the street. When a physician is subpœnaed to court to tell what he knows, whether it be a civil, a criminal or a chancery proceeding, somebody's rights are at stake, somebody's property rights, somebody's liberty or somebody's good name and reputation is at stake. And whenever that subpœna is read to any person, regardless of what his calling in life is, it is his absolute duty to obey that command, and the law is such that if it is not obeyed, the courts have the power and the right to see that it is obeyed. Now, then, I want to say to the physicians of Madison County, particularly those of you that are here, that whenever you are subpœnaed as a witness in a law suit, always be particular to make a notation, if you think your business might be such as will cause you to forget the exact time and day that you are supposed to be in court. If you think that your business, that the condition of your patients is such that you cannot attend court without a great deal of inconvenience at that time, then you take it up immediately with the lawyer that subpœnaed you. If you cannot do anything with that lawyer, then you take it up with the presiding judge and he will help you out. I know that it isn't right, so far as the duty that a physician owes to his patient, for a physician to be called into court and stay there hour after hour, day after day waiting for the particular case to be called or waiting for his time to go and testify. And for that reason you can invariably make some arrangement with the lawyers and the court, so that with our telephone systems and our electric car systems in this county, if you keep in touch with the lawyer, that you can be in the court-room when you are wanted, and be put upon the stand immediately, and then be excused. Never undertake to take the law in your own hands and disobey a summons, because if you do you will get into trouble. But if you cannot make arrangements with the lawyer, then you take it up with the court, and the court will help you out. I remember when I was trying a case down here last year. It was a criminal case and the doctor from Worden, I think it was Dr. Dorr, if I am not mistaken, called me up three times a day for three days. He called me up morning, noon and night. He had been subpœnaed in the case, and he called me up the night before the case was to be reached, and I told him that I was satisfied that the case wouldn't be reached in the morning, but for him to keep in touch with his office and I would advise his office when that case was reached, and by the time we had a jury he could be down and testify and go back to his work. Well, he called me in the morning and he called me again at noon and I told him that the case wouldn't be reached; and he called me again

that night and I told him that it wouldn't be reached, but when it was reached the doctor was right there, was put on the stand and I don't think he was in court over ten or fifteen minutes.

And I remember when we were trying the Horney case, taking weeks, and every day we had physicians from St. Louis on the stand, we had physicians from Madison County and physicians from Edwardsville were subpœnaed in that case. Dr. Neideringhaus of Granite City was subpœnaed in that case. Dr. Neideringhaus called me up on the telephone and explained to me that his aunt was seriously ill and was expected to die at any time. He says, she cannot live. He says I cannot do anything for her, but the folks expect me to stay with her and insist that I stay with her. I said, doctor, you just keep in touch with the office and if it is necessary we will move the court down to Granite City, and in fact had it arranged that the next day we were going to take a special car, and take the court down to Granite City. We were simply going to take the jury down there to take Dr. Neideringhaus' testimony, and come back. And why? Simply because we had respect for the relationship that existed between Dr. Neideringhaus and his aunt.

Now, gentlemen, that is about all I have to say to you on this subject. But you can always make arrangements with the court when you are subpœnaed if you will call up, and I want to say to you now, that I realize the position that a physician holds, and the duty that he is under and his obligations. And I will do all I can to assist you when you are called into court to give testimony in any case, whether civil or criminal; but don't disobey the subpœna.

I thank you.

THE PRESIDENT: The discussion will be closed by Mr. Burton.

MR. C. H. BURTON: *Mr. President and Gentlemen:*

When I came in this afternoon I was a little bit timid, a little scared, skeerd, as we used to say. I never tried a case like this before. I didn't know the court or the high bailiff here, but I knew some of the jury and I was willing to fall back on the jury. We lawyers try many cases by a jury of average men, of average citizens, neither too high or too low, just the average. I am always willing to take my chance with the average man, and gentlemen, as the doctors sometime say, when the patient begins to get a little restless and looks at the clock and thinks, well, my goodness, I am the only sick person in this whole neighborhood, I think that way; only it has been a little beyond the usual to-day, and you know it has been a long time since I have had a chance to treat you.

But I want to say one word, it occurred to me in the discussion on this subject by others of the gentlemen present, that is, of course, of interest to you all, that is the subject of mal-practice. I don't believe in it. I have had doctors work with me and tinker with me for just about fifty years and I don't believe there is any such thing as mal-practice, in a good doctor. I tell you where the mal-practice case comes in, it is where the doctor ain't doctoring. It is when he is doing something else, when he is so busy with something else, either a money making scheme, a racing scheme, or flying machine scheme or something that isn't practicing medicine.

You doctors have a harder study than we have. You have to read medicine, study medicine for five years, we only have to have three, and either we are smarter than you are when we begin or you are smarter than we are when you quit. I think you are smarter than we are both when you begin and quit. But the law don't ask impossibilities, it don't ask anything unreasonable, and I don't think there is a man practicing medicine in Madison County who isn't competent to practice and avoid mal-practice, yes, there isn't one of you excluded. But I know in this age of curatives and patent medicines that there is an inclination on the part of some to get others to take their places. Like, you take for instance, the various factories down here in Granite City, the operators try to hire others to take their place. They are in the whole day, in and out, and all of them hold hired insurance to take their place. I will give this job to someone else, they think, but they don't do it, and it is a bad job when they do it,

because it is the fellow that takes it that suffers. I don't believe that doctors can hire, by insurance, someone else to take off of their shoulders the responsibility that the law puts there, to treat fairly and conscientiously. And therefore, my advice is always to attend to your patients, and the average doctor, or any doctor of any school, be it one school or the other, will not be guilty of any mal-practice.

I want to say in conclusion just a word on the end of the subject that I have not touched upon, and that is the law.

It has been said that it is a grand profession when administered properly, and we have a kind of treatment we administer to lawyers when they don't do what the standard calls for, we disbar them, we turn them out of the profession. And the state bar association has a code of ethics which is in harmony with the national bar association's code of ethics. And the procedure is simple. It is simply this: that if a lawyer violates his obligations and duties as an officer of the court, charges are preferred by lawyers to the bar association. He has a hearing and trial and the evidence is taken down as the young man there has taken down what was said here to-day. It is considered thoroughly by the bar association, and it is presented to the court, and both sides can be heard. And if he has stolen the money of some poor widow or some orphan, if he has been guilty of any mal-practice as a lawyer, he is disbarred from the association and has his license to practice law withheld. It is taken away from him by the Supreme Court on the final hearing, and that is the penalty for the man that doesn't live up to the practice of the lawyer.

And as to the law, just let me read the lines, the sentiment of others:

"Of law no less can be acknowledged than that her seat is the bosom of God, her voice the harmony of the world. All things in heaven and earth do her homage; the very least as feeling her care, the greatest as not exempt from her power."

DR. E. A. COOK, of Alton: Mr. President, I move that the doctors of the Madison County Medical Association extend a vote of thanks to the lawyers who have given us this entertainment this afternoon.

THE PRESIDENT: I don't think any second is necessary. Those in favor of a vote of thanks being extended please signify by rising. We stand adjourned.

CONTROL OF BOVINE TUBERCULOSIS *

MAZYCK P. RAVENEL, M.D.

Director State Hygienic Laboratory; Professor of Bacteriology, University of Wisconsin

MADISON, WIS.

I almost feel that an apology is necessary for the presentation of a paper on this subject, but if anybody is to blame for my appearance here it is the secretary, who, after I had said that I had nothing new to give to the association, at the suggestion of President Welch asked that I would give a paper on this subject, to which I consented. I felt less hesitation in doing so, because during the past year some very important work has been published. Also, we have been confronted by a number of legislatures on this great subject. Especially active has been the legislature of Illinois, where a commission, headed by a lawyer, was appointed to determine the scientific accuracy of the tuberculin test and the pasteurization of milk. This commission, composed of eight laymen and two physicians, culin test, but admits, as it must of necessity in the face of the evidence, has brought in a report which declares against the necessity of the tuber-

* Remarks made before the National Association for the Study and Prevention of Tuberculosis, June, 1911.

that tuberculosis does pass from animals to man. This report has been already used in legislation to let down the bars. It is therefore important to those who are interested in the preservation of public health to continue the fight for pure milk.

There are two all-sufficient reasons for the control of bovine tuberculosis. The first of these is that the disease is an economic scourge, a problem affecting the farmers of the country and the public in general. It has something to do with the high cost of living—the reason why meat is so expensive. If anybody thinks that the packer who loses a lot of hogs or cows through the governmental inspection in the slaughter-houses is the loser thereby, he is mistaken. The loss falls on the consumer and on the farmer.

However, in the short time at my disposal, I shall take up only the second great reason for the control of bovine tuberculosis, namely, the preservation of public health. It is unnecessary to go into the history of the subject, since Dr. Welch has very ably reviewed in his presidental address to-day the work that has been done since Koch's paper in 1901 at the British Congress on Tuberculosis. Since that time the amount of work that has been brought forward has been enormous, and I am glad to say for American medicine that this subject had been well studied by several American workers before Koch read his paper, and that practical proof that he was wrong in his contention had already been obtained in America. Since that time we have had the reports of the results of the British Royal Commission and of the German Imperial Commission. They studied cases according to Koch's own method, namely, the isolation of cultures and the inoculation of animals of the bovine species. Further studies made largely in this country have shown that the rabbit is just as good a diagnostic agent for the separation of the two types of bacilli as cattle, if the dose is properly graded.

For the benefit of the laymen who are present at this meeting, let me say that Koch never said that the bovine bacillus and the human bacillus were two different germs. He said that they were two types of the same species, a fact which had been demonstrated five years before by Theobald Smith. Let me mention an illustration which I use in speaking to laymen, farmers particularly. Nobody could confuse a Jersey cow with a Holstein. They are very different in appearance, and yet both belong to the bovine race. In the same way the germ of tuberculosis from man and from cattle, while presenting certain differences in appearance, and especially in disease-producing power, belong to the same species. You are familiar with the work of the English and German commissions. The English Royal Commission examined sixty cases, and of that number found fourteen which showed bovine infection. The German Imperial Commission examined eighty-four children, and of that number twenty-one, or 25 per cent., had died of bovine infection. I do not like to criticize motives, but I think anybody who has read the reports of this commission must acknowledge that they have done all they could to support Koch. Within the last year and since the laboratory work has shown how wrong he was in his original contention, a collective report from the

clinical standpoint has been published in Germany in which an effort is made to sustain his contention. In fact, the statement is made in this paper that it goes far to support Koch's opinion. I have always held, and I think with the best of reasons, that clinical work is absolutely valueless in determining the source of infection in any given case of tuberculosis. I do not believe that there is any man in the world who can tell bovine infection from human infection clinically. We know, of course, that bovine infection is apt to determine a certain type of tuberculous lesion, and one may be justified at times in forming something of an opinion, but in generalized tuberculosis no one can tell with any degree of certainty the source of infection.

A clear demonstration of this point has been given in the city of New York. In that city, under the leadership of Drs. Holt, Northrup and others, it was maintained by many physicians for a long time that there was no danger to children from the milk of tuberculous cattle. I have heard this subject discussed by some of these gentlemen repeatedly, and always the danger from tuberculous cattle was considered practically negligible. Dr. William H. Park, director of the Research Laboratories of the Board of Health, has taken up the subject from a laboratory standpoint and done a masterly piece of work. His conclusions are that upwards of 300 children die in the city of New York every year from bovine infection. What clearer demonstration could be given of the fallacy into which men who study only the clinical side of the question are apt to fall? It is impossible for clinical men to determine this question.

I wish to call attention to Koch's change of position, because it has misled many people, even some who profess to be experts on this subject. In 1901 Koch said practically that there was no danger to human beings from bovine tuberculosis. He put it in this way:

". . . if such a susceptibility really exists the infection of human beings is but a very rare occurrence. I should estimate the extent of infection by the milk and flesh of tuberculous cattle, and the butter made of this milk, is hardly greater than that of hereditary transmission, and therefore do not deem it advisable to take any measures against it."

This amounted practically to saying that there was no danger from bovine tuberculosis, and this interpretation was accepted all over the world.

In 1908 at Washington, Koch shifted his ground absolutely. However, in his introduction he used words which implied that he still held the opinion expressed in 1901. He says:

"The results of these experiments have led me to the conclusion which I have first communicated to the British Congress on Tuberculosis in 1901."

He acknowledges in these conclusions that "Human beings may be infected by bovine tubercle bacilli, but serious disease from this cause occurs very rarely."

His third conclusion is that "Preventive measures against tuberculosis should therefore be directed primarily against the propagation of human tubercle bacilli."

His further contention, and practically the only one which he maintained strongly, was that bovine tubercle did not produce pulmonary consumption. This change of ground has not been recognized by many people, and it should be understood by everyone. Furthermore, Koch apparently ignored the proof furnished by the German Imperial Commission, although he was one of the twenty-five professors directing this work. He apparently ignored the work of the English Commission and that done by private workers all over the world. It makes very little difference whether one dies of pulmonary tuberculosis or of intestinal or glandular tuberculosis or tuberculous meningitis. We, of course, recognize an academic difference, and also that pulmonary tuberculosis is more dangerous as a focus of infection as a rule than some of these other types, but so far as the death-rate goes, the location of the lesion makes very little difference. It does not concern a bereaved father or mother to know whether a child dies from tuberculosis of the lungs or from tuberculosis of the intestinal tract. The point we must keep our eye on is the fact that the bovine tubercle bacillus does gain entrance to the human body not infrequently and produces a fatal infection. We may acknowledge at the present time that this infection takes place almost entirely in childhood and chiefly during the first five years of life. Dr. Park has collected the following figures: In adults only nine cases of bovine infection have been reported out of 686 examined. However, in children from 5 to 16 years of age, of 132 cases examined, thirty-three were bovine, and of children under 5 years of age of 220 examined, fifty-nine showed bovine infection. These figures amply corroborate the results of the commissions above referred to.

Let us analyze Dr. Park's figures a little further: In pulmonary consumption he examined 294 cases without finding the bovine type of bacillus in any.

Glands of the neck, adults, nine cases examined, none bovine. Children (5 to 15 years), twenty-seven cases examined, 30 per cent. bovine. Infants (0 to 5 years), nineteen cases examined, 68 per cent. bovine.

In corresponding cases collected by Dr. Park from foreign literature, the following results were obtained: Pulmonary consumption, 1,000 cases examined, 1 per cent. bovine. Glands of the neck, adults, twenty-eight examined, 3.5 per cent. bovine. Children (5 to 15 years), fifty-seven examined, 30 per cent. bovine. Infants (0 to 5 years), thirty-six examined, 58 per cent. bovine.

General fatal tuberculosis: Adults (Park), four examined, 0 per cent. bovine. Adults (foreign), sixty examined, 8 per cent. bovine. Young children, five examined, 20 per cent. bovine; young children (foreign), thirty-one examined, 32 per cent. bovine. Infants (Park), seventy-eight examined, 23 per cent. bovine. Infants (foreign), 173 examined, 25 per cent. bovine.

A great deal of evidence of the same sort could be brought forward, but surely we need go no further to demonstrate to the most doubting person the necessity of controlling bovine tuberculosis as a method of protecting the public health.

In regard to cases of pulmonary tuberculosis being due to the bovine bacillus we must accept the evidence at hand. However, a question has arisen as to the possibility of the bovine tubercle bacillus undergoing a change by residence in the human body so that it would take on the characteristics of the human tubercle bacillus. Dr. Welch touched on this question yesterday, and concluded that the weight of evidence was against such a change, admitting, however, that it was still an open question. I may say before going further that it is my belief that such transformation not only can but does take place. How much time is required to bring this about I am not prepared to say.

In experiments at the University of Pennsylvania by Dr. Leonard Pearson and myself, we succeeded in one instance in changing a bacillus of typical human type into one which was typically bovine. I acknowledge freely that the experiment was not repeated. Further than this, every one who has done experimental work in regard to tuberculosis knows that during the long period of time required it is possible for outside infection to occur. It is also possible that an experimental animal may carry a latent tuberculosis of the bovine type. However, every precaution possible was taken in these experiments, and the calves were all tested with tuberculin. After five passages through calves, the culture from being typically human became typically bovine in every respect.

During the last year Professor Eber of Leipsig has published a report of a similar piece of work and come to very much the same conclusion. Nocard succeeded in changing a mammalian tubercle bacillus into one of the avian type by enclosing the culture in a collodion sack and putting it in the peritoneal cavity of a bird. The fish tubercle bacillus described by Dubard almost certainly had its origin in sputum from a consumptive thrown into the stream where the fish were kept. Moller has also changed the type of the tubercle bacillus by passage through the blind worm. It is well known that birds are usually quite resistant to the mammalian tubercle bacillus, yet either by feeding or by inoculation a certain number will succumb. From such a bird the disease can be carried on in series. In other words, the mammalian bacillus has become changed into one of the avian type. Romer has reported an autopsy made on a tuberculous cow in which the intestines and glands were exposed to and eaten by chickens. One after another the whole flock of chickens died of avian tuberculosis. Thus we have good evidence that the tubercle bacillus does change its type and character according to the soil in which it lives. The difference between the mammalian type of tubercle bacillus and the avian type is very much greater than that between the bovine and human.

Further than this, it is well known that the tubercle bacillus under constant cultivation in the laboratory may undergo a loss of virulence and a change in morphology. This is strikingly illustrated in cultures of the bovine type, which after a certain number of generations on artificial culture media, show changes in their staining characteristics and morphology. We have certain observations also of a marked change in virulence, not only in bovine tubercle bacilli, but in human as well. If the tubercle bacillus does not change its type by prolonged residence in a

given soil, it seems to be an exception to all germs of which we have any knowledge. After a number of years of work with cultures of the tubercle bacillus, I acknowledge very freely that it is exceedingly retentive of its type and characteristics, perhaps more so than any other germ which we know, yet I think it must be conceded that changes do take place.

As an example of marked changes which can be brought about in other germs, let us take the anthrax bacillus. Of all known bacteria this is perhaps the most typical spore-former. These spores retain their virulence for years under very adverse circumstances. Yet it is well known that anthrax vaccine is readily produced by growing the germ at a temperature slightly higher than that at which it grows best. In from ten to twenty days a virulent culture can be so modified that it does not produce spores and will not even kill a guinea-pig.

In view of all these facts I am not yet convinced that the finding of bacilli of the human type in cases of pulmonary tuberculosis proves absolutely that the infection in the first instance came from a human being. I am not willing, however, to try and force conclusions which are more sweeping than the facts at hand warrant, and for the present at least must abide by the facts which have been demonstrated. The question is one which requires further study.

All of the work which has been done so far gives evidence that the chief danger from bovine tuberculosis is for children. The work done in foreign lands, as well as in our own country, shows that the great majority of persons infected with the bovine tubercle bacillus are below the age of 15 years, and bovine infection is especially marked in young children under the age of 5. The evidence appears to show that the adult is not particularly susceptible to bovine tuberculosis. This is as far as our present knowledge enables us to go, and this statement is made with the reservation concerning the change in morphology and character which may come about by residence in the human body.

More than a year ago the American Veterinary Medical Association appointed an International Commission to make a study of the best methods of controlling bovine tuberculosis. This commission, consisting of fourteen members, spent a year in studying the subject, and rendered a report in September of last year. This has been published by the Bureau of Animal Industry at Washington, by the Veterinary Director General of Canada, by the Conservation Commission of Canada, and by the American Veterinary Medical Association. It can be obtained from the Bureau of Animal Industry in Washington, or from these other sources. The purpose was to study the principles and lay down the fundamentals for control, hoping thereby to unify the procedures on the American continent. In the United States of America we are in a particularly bad condition, as each state can make its own laws, regardless of what its neighbors wish. Only through our interstate commerce have we any unity of action at all. I would suggest that this association do all in its power to spread this report and assist in having laws enacted in the various states which are in consonance with the fundamentals there laid down. The commission supported the tuberculin test as a safe and early means of diagnosis; in fact, the only reliable means known.

It further recommended the rearing of healthy herds from tuberculous mothers by the modification of what is known as the Bang method. Wherever a large number of cattle are found in any herd which show tuberculosis, the herd must be regarded as infected, and all animals in that herd should be treated as infected. The Bang method, as first practiced, permitted the separation of reactors from non-reactors. This method, however, we consider as containing some dangerous features. Where the herd has only a small number of tuberculous animals the reactors may be separated from the non-reactors, and the latter may be admitted under strict regulations into healthy herds; from the offspring of both classes of cattle a healthy herd may be reared. In addition to this, strict quarantine must be observed and no tuberculous animals be admitted to any country or state. It is impossible to abstract this entire report in this paper, but these are some of the fundamental principles which seemed to be more important.

In conclusion, let me say that in the light of our present knowledge we must admit that man is the chief source of danger to man. However, I personally believe that the percentage of bovine infection in the human being is much larger than is generally recognized. It is our duty, therefore, to demand laws of our legislators enabling us to suppress bovine tuberculosis, which is at once an economic scourge and a menace to human beings. This should be a strong feature in our propaganda for preventive medicine.

THE PRESENT EUROPEAN OPINION OF SALVARSAN

PHILIP FRANK SHAFFNER, B.S., M.D.
CHICAGO

The literature on the subject of salvarsan is practically inexhaustible, and the busy practitioner is unable to read even the abstracts of the various articles published abroad. In view of this fact, a few expository remarks presenting a "bird's-eye" view of the subject will be of value.

The opinions I shall attempt to give are those of the clinicians of Berlin and Vienna. A marked diversity of opinion does not exist so that a composite picture can be presented without doing the subject an injustice.

The true value of salvarsan is unquestionably not as yet determinable, but so far certain definite ideas regarding the Ehrlich discovery have been formulated. The German school considers salvarsan to be of more value than does the Austrian; this is undoubtedly due to personal reasons to a great extent. In a symposium held on the subject in Vienna last November (1910), a statement was made by one of the world's foremost dermatologists to the effect that anyone using "606" was guilty of malpractice. At that time the destructive results of salvarsan in its local reactions were being observed, and it was such conditions which in all probability lead to so radical a statement.

In general, one gets the following opinion of the Ehrlich-Hata:

Salvarsan is unquestionably of considerable value. It is not as efficient as mercury, yet on the other hand a combined mercurial and arsenical treatment is in all probability more effectual than any one drug, including mercury.

The indications for salvarsan are generally held to be as follows:

1. Hard chancres. Those cases which are seen very early; within several days after their appearance when no glands or exanthemata are demonstrable; in brief, to be given as an abortive treatment. This means that as such the drug should never be given later than the fourth week after infection. Finger has tabulated two series of cases. In Series A, consisting of twenty-six cases, the following abortive procedure was followed: The chancres were extirpated, which Finger always does whenever possible, and the patients were then subjected to energetic mercurial inunctions. Six of these twenty-six failed to exhibit any further evidence of the disease, including a positive Wassermann reaction; that is, about 23 per cent. gave evidence, in all probability, of a successful result in an abortive treatment with mercury. Series B, comprised a total of twenty patients: In these the chancres were treated as before and salvarsan instead of mercury was given intravenously. As a result, four cases or 20 per cent. failed to present any further signs of syphilis. According to these figures the mercurial treatment gave even better results than did the salvarsan, but the number of cases is so small that no deductions tending to disprove this indication can be drawn.

2. Lethal indications, that is when the patient is in immediate danger of succumbing to the disorder, the comparatively slow action of mercury would be futile, and so in such cases salvarsan is used. The varieties of these cases are as follows:

(a) Very deep pharyngeal ulceration with danger of an aspiration pneumonia.

(b) Gummata of the brain with pronounced nervous symptoms.

(c) Early syphilitic apoplexy.

(d) Congenital syphilis.

In regard to the latter there is a great diversity of opinion. A mortality rate of 100 per cent., observed by numerous good men, has caused many to hold congenital syphilis as an absolute contra-indication for the drug, while others, more fortunate in their results, claim that salvarsan is indicated in the luetic infant.

(e) In the so-called malignant syphilis where salvarsan should be used cautiously and in a comparatively small dose.

3. Those cases refractive to mercury or potassium iodid.

4. Those patients where a rapid effect is desired to avoid a poor cosmetic result as in deep destructive lesions of the nose, etc.

The contra-indications are as follows:

1. Any other coexisting disease, as organic diseases of the heart, blood-vessels, kidneys, lungs, nervous system, etc.; that is, the drug should be administered only in otherwise healthy patients.

2. All patients over 50 years of age, even if no other disease is present.

3. Those patients responding to mercury or iodids.

4. In those cases where a positive Wassermann reaction exists without any other syphilitic symptoms being present. While on this point it is interesting to note the effect of Ehrlich's remedy on the Wassermann reaction. George Meier, Wassermann's first assistant, has said that fewer negative reactions are observed after salvarsan than after mercury. As a rule, he finds that the reaction does not become negative until four weeks or so after an injection, and then two or even three such injections are required to bring this about. Moreover, many of the negative Wassermanns appearing so after one or two injections become positive again. Ninety per cent. of the cases treated with three intravenous injections, all given within six weeks, show a negative Wassermann. Meier believes from the standpoint of the Wassermann reaction that a single intravenous injection is sufficient only in those patients exhibiting symptomatic recurrences of the disease. He also has found that a negative reaction may become positive again twenty-four hours or so after an injection of salvarsan, but he believes that this phenomenon is an example of the Jarisch-Herxheimer reaction, and he has found the same condition after mercurial treatment.

In regard to the untoward effects of salvarsan, Finger maintains that nervous complications, such as neuritis of the optic, auditory, facial nerves, etc., are commoner with "606" treatment than with mercury. Professor Finger found 10 per cent. such complications in a series of cases treated with salvarsan. However, some of the oculists of Vienna claim that optic neuritis is not more frequent with the new treatment than with the old. They point out that since the syphilographers are using salvarsan, a great many more eye-grounds are examined than were before; meaning, of course, that the frequency of optic neuritis, as an example, is not, altogether, an untoward result of the arsenic, but an effect of syphilis itself. Finger also believes this, and, furthermore, he claims that many of these nervous complications respond to either quicksilver or additional salvarsan.

Ehrlich maintains that certain nerves, such as the optic, auditory, facial, etc., do not receive the fullest possible benefit from the arsenic because these nerves, due to their anatomic relations, are relatively poor in blood-supply, and hence comparatively small amounts gain access to their invading spirochetes.

Still another explanation has been offered to account for these nervous complications following the use of salvarsan. It is believed that these manifestations are in reality further evidence of the Jarisch-Herxheimer reaction. Obviously, the question is as yet unsettled.

A number of cases of death following the use of the Ehrlich-Hata are recorded, but Stoerck, who has charge of all the post-mortem examinations of the *Allgemeines Krankenhaus*, has never seen or heard of a single case in Vienna in which death was directly due to arsenic. Even in the autopsies performed on those cases in which salvarsan had been administered some time previously, no evidence of any acute arsenical poisoning was discernible.

Although not bearing directly on the subject, it might be well to say a few words regarding the choice of method of administering this new preparation. Almost everyone in Berlin and Vienna is giving salvarsan intravenously in a feebly alkaline solution. Lately, however, some of the clinicians have fallen back to the deep intramuscular injections, believing that since a *therapia sterilisans magna* is improbable, it is best to give the drug in such a manner as to promote long-continued, slow absorption. The latest method now in vogue in several of the smaller clinics is the mono-acid solution, injected intramuscularly, giving the salvarsan in very small doses at intervals of from ten days to two weeks, much like our mercurial injections, except that in the latter our intermissions between injections are much shorter. The results of such treatments are as yet, of course, indefinite.

The tendency throughout is to give salvarsan in smaller doses, and instead of 0.6, which was the dose when Ehrlich's *therapia sterilisans magna* was attempted, the drug is now being given mostly in an average amount of 0.4.

As to the general schema of treatment, I believe that three methods—one from the Lesser clinic (Berlin), another from the Riehl (the old Kaposi) clinic in Vienna, and a third from Privat Docent Weidenfeld, who has a large *Krankenkassen* clinic—will suffice. Each school in Europe varies somewhat in minor details, but every clinic of any size and importance gives a combined mercury and arsenic medication. The Lesser clinic gives three intravenous injections within a period of six weeks. This is constituted as a so-called "Kur," or as is termed in the United States, a course of treatments, and later it is followed up with mercury either as inunctions or injections. Kren of the Riehl clinic gives salvarsan intravenously, and within two or three days, that is, when the shock of the injection is over, he starts energetic treatment with inunctions giving the usual course of thirty daily rubbings. The patients are then allowed to return home and are told to report in six or eight weeks. As a rule, they fail to do so unless they observe recurrences. In such cases they are put through exactly the same procedure as before, that is, intravenous salvarsan plus mercurial inunctions, or perhaps injections according to the patient.

Weidenfeld (Vienna) claims that a combined arsenical and mercurial treatment is above any other procedure heretofore known. He believes that the Ehrlich will always be used in the future combined with mercury. Weidenfeld gives the salvarsan as follows: First he prescribes a series of salicylate of mercury injections, then immediately after he injects the arsenic intramuscularly in the neutral suspension, believing that the best results follow this insoluble preparation. Three months later he follows this up with a second series of mercurial injections, and finally, as the fourth so-called "Kur," he administers a second intramuscular salvarsan. Weidenfeld prefers to start with mercury because he believes that this drug benumbs the spirochetes, so to speak, and the salvarsan following on the mercury kills the majority of them. He thinks that as time goes on we will be able to cure syphilis completely in one

year's time with two Ehrlich's and two series of mercurial injections given alternately during the year.

Finally in regard to the present European opinion of salvarsan, we can conclude the following:

1. Ehrlich's discovery is a valuable adjunct in our treatment of syphilis.

2. Salvarsan has its specific indications, and in these special cases it should be used in combination with mercury.

3. The untoward results of the drug are probably minimal. The nervous complications are in a measure, from present indications, due partly to the arsenic, but are also the results of the disease itself.

4. The Wassermann reaction becomes negative and remains so only after two or more injections given within a short period of each other.

5. The method of administering the drug varies, but the majority of injections are given intravenously; and, furthermore, in smaller doses than formerly.

6. The general schema of treatment is to alternate mercury "Kurs" with salvarsan.

7. That, after all, we are still in the experimental stage of salvarsan, and therefore, compared to our present knowledge of mercury, little as yet is definitely known.

31 North State Street.

CHICAGO CITY BUDGET FOR 1912

Now that the city budget for 1912 is up for consideration, the question of providing needed funds for carrying on in an efficient way the various activities of the Department of Health is certainly of vital importance to the people of Chicago. This statement must not be taken as putting into the background or in any manner ignoring the importance and value of any of the other branches of the municipal service.

The commissioner of health, however, has a keen sense of the responsibilities resting upon him as head of the department that is peculiarly charged with the duty of protecting and conserving the public health. In this article then, as well as in those that are to follow, the aim will be to present the needs of the Department, the work it is doing and what that work means as affecting the health and comfort of the people.

The commissioner takes it for granted that all good citizens of Chicago desire an efficient and progressive health service at his hands. Last year's methods will not always do this year's work in the best way. Each year brings new knowledge that must be applied in public health work. Not to advance means to fall back. But men and means are needed to keep the Department in the place it has so long held among the leading municipal health departments in the world.—From *Bulletin, Chicago Department of Health.*

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY

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OCTOBER, 1911

THE STANDING OF THE INFERIOR CHICAGO SCHOOLS IN NEIGHBORING TOWNS

It was recently stated in THE JOURNAL, that the inferior Chicago schools were in such bad standing in other states, that their graduates were not permitted to appear for examination, and as a natural consequence their crude products were compelled to take the Illinois examination, and when passed by the benevolent Board of Health came in active competition with the already overburdened medical inhabitants of "suckerdom."

To secure confirmation of this statement from our neighboring states we prepared the following letter which we sent to the executive officers of Indiana, Ohio, Pennsylvania, New York, Kentucky, Missouri, Iowa, Minnesota, Wisconsin, and Colorado:

"SECRETARY OF STATE BOARD OF HEALTH OR MEDICAL EXAMINERS.

"*Dear Doctor*:—Will you kindly inform me whether your board admits to examination the graduates of the following Chicago schools, to-wit: Hering Medical College, Chicago College of Medicine and Surgery, Jenner Medical College, Reliance Medical College and The National Medical University.

"Also what is your rule regarding the examinations of graduates of the following institutions, all of Chicago: Littlejohn College and Hos-

pital (Osteopathic), Illinois Kiro-Practic University, National School of Chiropractic and Physiological Adjustment, McCormick Neurological College, Oakley Smith College of Naprapathy, American College of Mechano-Therapy, Northern Illinois College of Opthalmology and Otology, Chicago School of Optical Science and Mental Therapeutics."

Up to the time of going to press we have received replies from six of these states. We digest their letters as follows:

STATE OF NEW YORK
EDUCATIONAL DEPARTMENT
ALBANY

"*Dear Sir:*—I beg to say that the Hering Medical College is accredited with three years only by this department; Jenner Medical College is accredited with two years; Reliance Medical College and National Medical University are not even accredited; Chicago School of Medicine and Surgery is fully registered; Littlejohn College and Hospital (Osteopathic), is accredited with three years; the other institutions you mention are not recognized at all by us.

"In order to be admitted to a licensing examination in this state, the applicant must not only hold the M.D. degree from a registered institution but will be required to furnish evidence of the required preliminary education. Hence it will be seen that of all the institutions mentioned above, only the Chicago School of Medicine and Surgery is recognized as graduating students who may enter our licensing examinations providing they meet our further requirements. Yours truly,

"A. S. DOWNING, *First Ass't Commissioner of Education.*"

"P. S.—Since writing the above, some question has arisen in regard to Chicago School of Medicine and Surgery, and the desirability of continuing its registration."

WISCONSIN BOARD OF MEDICAL EXAMINERS

"*Gentlemen:*—In reply to your favor of the 19th inst. we wish to state that we recognize none of the graduates of the medical colleges mentioned in your letter, nor do we have anything to do with any graduates of the schools mentioned in the second paragraph of your letter, except the Littlejohn School of Osteopathy, whose graduates are accepted for examination the same as other reputable medical colleges.

"Yours sincerely,

"JOHN M. BEFFEL, *Secretary.*"

THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

"*Dear Sir:*—In compliance with your request of September 19th, I beg to say that our board does not recognize nor admit to our examinations graduates of Hering Medical College, Jenner Medical College, Reliance Medical College and National Medical University.

"We have nothing whatever to do with the other institutions mentioned in your letter and they are not recognized by this board.

"Minnesota has its own Board of Osteopathic Examiners, and a Board of Optometry. Yours truly,

"W. S. FULLERTON, M.D., *Secretary.*"

THE STATE OF OHIO

"A list of medical colleges acceptable to the Ohio Board will probably be acted upon at the meeting on October 3.

"We have been registering applicants from the Hering Medical College and have also recognized credentials from the Chicago School of Medicine and Surgery, likewise the Jenner Medical College. We have never had occasion to pass upon the credentials from the Reliance Medical College nor the National Medical University. The Littlejohn College and Hospital (Osteopathic), has also been recognized in the past. No applications from either of the other schools mentioned in your communication have come before us for consideration.

"Very Respectfully,

"GEORGE M. MATSON, *Secretary.*"

STATE BOARD OF HEALTH OF KENTUCKY

"None of the colleges named in your letter of the 19th instant are recognized as reputable by this board.

"Very truly yours,

"J. N. MCCORMACK, *Secretary.*"

IOWA STATE BOARD OF MEDICAL EXAMINERS

"In reply to your communication of September 19th, I have to say that this board recognizes diplomas from the Chicago College of Medicine and Surgery and Hering Medical College, but does not recognize diplomas from the National Medical University. We have had no applicants for examination from Jenner or Reliance for several years, therefore it will be impossible for me to say whether or not applicants from these schools would be admitted to examination by this board.

"The Iowa statutes do not recognize Chiropractics.

"GUILFORD H. SUMNER, *Secretary.*"

INDIANA STATE BOARD OF MEDICAL REGISTRATION AND EXAMINATION

"*Dear Sir:*—Replying to your inquiry of some days ago, beg to say that it is the policy of this board not to pass upon the standing and credibility of a medical school until an applicant comes up for examination from said school, then the matter is brought to the board's attention and passed upon.

"Graduates from the National Medical University, the Jenner and Reliance Medical Colleges are not admitted to the Indiana examination for license to practice medicine.

"Graduates from the Littlejohn College and Hospital (Osteopathic), who have, by documentary evidence, satisfied this board that they have attended four courses of instruction in said institution, of not less than eight months each in separate calender years, are admitted to the osteopathic examination.

"The Illinois Kiro-Practic University, National School of Chiropractic and Physiological Adjustment, McCormick Neurological College, Oakley Smith College of Naprapathy, American College of Mechano-Therapy, Northern Illinois College of Ophthalmology and Otology, and the Chicago School of Optical Science and Mental Therapeutics have no standing with this board for the reason that we have no knowledge of said institutions and have had no applicants coming from the above last named institutions.

"Applicants from the Hering Medical College have been admitted to the Indiana examination up to the present time. We recognize, however, that this school is perhaps not equipped as it should be and will perhaps take the matter up in a short time and determine whether or not it shall be further recognized in Indiana. Very truly,

"W. T. Gott, M.D., *Secretary.*"

LACERATION OF THE PERINEUM

An original and effective method of curing laceration of the perineum has been proposed by Dr. A. Lapthorn Smith, of Montreal, Canada. His contribution was published in the *Medical Record* of July 29th. Dr. Smith's suggestion has created a great deal of interest among obstetricians and the operation is so easily performed even in private practice that we publish a description for the benefit of our readers.

"Just before the child's head comes down on the perineum, the patient is anesthetized and brought across the edge of the bed with the feet held by a twisted sheet or leg holder. The perineum is sterilized with a soap and brush and mercuric bichlorid, and then with the large curved perineum needle on a handle, furnished by Chapman of Montreal, held firmly in the right hand, and with the thumb of the left hand in the anus and the left forefinger in the vagina the needle is entered at the base of the lesser lip on the patient's left, taking in the levator ani muscles and passed rapidly under the vagina, and about two and one-half inches above the fourchette, coming out of the corresponding point on the woman's right side. A silkworm gut suture is threaded into it and the needle is withdrawn, followed by the silkworm gut, the two ends of which are caught up with two Pean forceps. A second one is passed in the same way an inch lower down, but taking in the muscles of the perineum. We can generally tell beforehand, by the rigidity of the perineum, whether the tear is going to be a bad one or not. In the former case we can put in

a third stitch, which would take in the sphincter ani on each side of the middle line. Delivery can now go on naturally or artificially, but as soon as the placenta has been delivered the perineum is inspected under a good light and a stream of water, all clots being rubbed off with the finger; the stitches are tied from above downward, when we will find that there is absolutely accurate coaptation of the separated parts.

"Speaking of the light in the confinement room, especially of the poor, we should always take steps before delivery to provide a good light for two reasons: That we may see how dirty the place is, and second to see what we are doing. As a rule, a darkened room means a dirty and badly ventilated one. In the daytime, arrange the patient so that the perineum will be facing a bright window; and if the confinement is likely to take place at night, provide beforehand for a good light easily available for examining the perineum. When we hear physicians say that they have never seen a tear of the perineum they may be telling the truth, because they have attended all their patients in a dark room. The presence of the silkworm gut stitches placed as stated before the head comes through the perineum, and hanging loosely attached by their ends to a Pean forceps, does not interfere with the termination of the labor in any way, not even when the forceps is required. If by keeping the pain under control and the head well towards the symphysis, there has happily been no laceration of the perineum, no harm is done by their having been introduced, you simply take off the forceps and draw them out, while if the perineum has been lacerated more or less, it is a great advantage to save time by having them already in, but still more by having them exactly in the right place to bring the lacerated surfaces together, just as they were before delivery. Placing perineal sutures before the tear occurs is 'an ounce of prevention worth a pound of cure.'"

BOVINE TUBERCULOSIS

As promised in our July issue, we take pleasure in presenting the paper on this subject prepared for the meeting at Denver, June 21, 1911, by Professor Ravenel of the University of Wisconsin, and an acknowledged authority on this subject. Professor Ravenel was at the conclusion of this meeting elected president of the National Association for the Study and Prevention of Tuberculosis. The honor of this high position gives added weight to the language of his paper and his private conversation regarding the disgrace suffered by Illinois in its legislature and State Board of Health. We hope our readers will study the whole paper, which is a sane and truthful statement of the subject. We quote only two paragraphs which are of especial importance to our members.

"Especially active has been the legislature of Illinois, where a commission, headed by a lawyer, was appointed to determine the scientific accuracy of the tuberculin test and the pasteurization of milk. This commission, composed of eight laymen and two physicians, have brought in a report which declares against the necessity of the tuberculin test, but admits, as it must of necessity in the face of the evidence, that tuberculosis

does pass from animals to man. This report has already been used in legislation to let down the bars. *It is therefore important to those who are interested in the preservation of public health to continue the fight for pure milk.*"

"In conclusion, let me say that in the light of our present knowledge we must admit that man is the chief source of danger to man. However, I personally believe that the percentage of bovine infection in the human being is much larger than is generally recognized. It is our duty, therefore, to demand laws of our legislators enabling us to *suppress bovine tuberculosis, which is at once an economic scourge and a menace to human beings.* This should be a strong feature in our propaganda for a preventive machine."

THE DAWN OF A BETTER DAY

For many years the medical profession has had just cause for complaint against the miserable advertisements of patent-medicine fakes and charlatans in rural publications. However, these advertisements are not limited to the rural press. It now appears that at a recent meeting of the Farmers' Press Association, held at the Hotel La Salle in Chicago, there is to be a stop to the printing of such fake ads., and we have great hopes this movement will finally result in influencing the metropolitan press to protect their readers from this piratical class.

The Chicago *Tribune* of Sept. 14, 1911, contains the following information on this subject:

"Fake land, patent medicine, whisky and general misleading and exaggerated advertisements are to be excluded from the rural publications according to the vote of the Farm Press Association at its final meeting in the Hotel La Salle yesterday.

"F. J. Merriam of Atlanta, Ga., vice-president of the organization and manager of the *Southern Ruralist*, said: 'The average city resident picking up a rural weekly would think that all farmers were suckers. It's an insult to the intelligence of our readers. I am glad that the papers represented in the Farm Press Association are to exclude these fake ads.'"

SPREAD THE KNOWLEDGE

Dr. W. C. Bouton of Waukegan has printed on the back of his prescription blanks the following statement made by Dr. Frederick Peterson, a well-known New York neurologist.

Dr. Bouton suggests that the universal use of some such statement on physicians' blanks would do much to call attention to the bad effects of alcohol.

"ALCOHOL IS A POISON

"It is claimed by some that alcohol is a food. If so, it is a poisoned food. The daily regular use of alcohol, even in moderation, often leads

to chronic alcoholism. One is poisoned less rapidly by the use of beer than by drinking wines, gin, whisky and brandy.

"Alcoholism is one of the commonest causes of insanity, epilepsy, paralysis, diseases of the liver and stomach, dropsy and tuberculosis. A father or mother who drinks, poisons the children born to them so that many die in infancy, while others grow up as idiots and epileptics."

FROM THE MADISON COUNTY DOCTOR

The following article, undoubtedly from the pen of Dr. E. W. Fiegenbaum, secretary of the Madison County Medical Society, which appeared in the September issue of the *Madison County Doctor,* is a graphic portrait of that class of men said to be rapidly disappearing, and we are glad to give place to this interesting communication.

THE OLD FAMILY DOCTOR

Forty years ago a man well past middle life, was seated in a room, engaged in earnest conversation with an elderly lady. The room was furnished meagerly, but bore a semi-professional air, for on the walls hung a small shelf filled with books, some cheap prints and a bust of Æsculapius. The conversation was on the subject of the visitor's son, who had gone to a distant city and now was in great trouble. The mother instinctively turned to the old doctor for advice and counsel, and he in turn dismissed her, with a promise that her son would receive the necessary help through an intimate friend, a colleague residing in the city.

As the lady passed out, a young man entered whose child was sick. Filling a bottle with the selected remedy, and giving many directions for its use, the young man was sent home to begin the treatment. The old man with a sigh snatched up his saddle bags containing about all his stock in trade and hurriedly left the room to saddle his old gray mare and begin his daily rounds. As he rides through the streets of his little town, he is greeted with a nod and a friendly smile by every one he meets, for they all know and love this kindly old man.

Just outside of the town he stops at a farm-house to visit a ten year old lad whose leg was fractured a week ago. With awkward fingers he adjusts the board splints with bandages torn from an old sheet, and though the operation causes the lad to wince with pain, he smiles at the old man, for he knows that the old doctor is his friend and would not cause him needless suffering. With a cheery nod and farewell, the old man departs, only to stop again two miles further on. Here in a small homely chamber, only yesterday, the battle of life and death was on; aye, not only one but two lives hung in the balance, but the old doctor was the victor and the young mother smiles as he enters, as if she had seen the face of an angel, and as the old doctor departs the benediction of that household follows him. On the road he meets a patient to whom he administers out of the old saddle bags, and resumes his journey. A little farther on he stops to visit a man who has typhoid fever. The surroundings from a hygienic standpoint are bad, but it was the best that could be had. The patient is desperately sick, anxiety is depicted on every face, and the doctor looks perplexed. The bread winner is making a fight, and if it should prove to be a losing one the family will lose its main stay and will be left in bad condition. All of this weighs heavily upon his mind as he is called to share the family dinner. Reverently he bows his head and partakes of the homely fare, when he again visits

the sick room, and with many assurances of the ultimate recovery of his patient mounts his faithful horse, whose welfare has also been looked after during the stay.

He must hurry along for there are still many calls to make and he must be back in time to preside at a town meeting of his fellow citizens, called for that evening. As he rides along his mind is occupied by many things. His prophetic eye sees that a change is about to take place in his profession. One by one the doctors of the old school drop by the wayside. The old type is disappearing and a new one coming in. Better did you say? Well, let us hope so. Will the new doctors be as patient and sympathetic as were they of the saddlebags? Will they be as conscientious? Has not commercialism crept in and destroyed every vestige of the old time intimacy between the family and the doctor? Does the new generation of doctors help to bear the family burden, share in the family joys and woes, or do they furnish so much service, for so much cash? Brave old heroes, they did the best they could with the appliances they had at the time, and did it well. All honor to their memory.

The old doctor starts out of his revery, urges his steed to a faster gait as he views the declining sun. There he goes up the hill, beyond which he must make another call. Now he has reached the top; now he descends on the other side. Slowly he fades from our sight. Now he is gone. Goodbye old family doctor. We will see him no more.

> He never sought, in life's industrious ways,
> A large return or loud or lasting praise;
> But to the sacred task which Heaven assigned,
> In pain's hushed chamber gave his strength and mind,
> Believing so he served his master best,
> Trusting the Great Physician for the rest.

NEW COUNTY BULLETINS

The Adams County Medical Society and Williamson County Medical Society have recently commenced the issuing of neat and newsy monthly bulletins in the interests of those organizations. The expense of printing and circulating these bulletins is probably altogether borne by advertisements which have been obtained from local business men of the county seat in which the society is located. Undoubtedly the effect of these publications will be to more closely unite the profession in the respective counties.

THE HEALTH COLUMN IN THE CHICAGO TRIBUNE

The Chicago *Daily Tribune*, for many years known as one of the most progressive and ably edited papers in the world, has added another new feature in its columns entitled the Health Department. Dr. Evans, long connected with the Chicago Health Department, and as a teacher in the principal medical colleges of Chicago, has had excellent training to make a success in this field. Judging from the articles that have already appeared in the *Tribune*, this new feature is destined to do a great deal of good for the cause of sanitation and rational medicine.

THE OTTAWA TENT COLONY

A recent visit to Dr. Pettit's Tent Colony, at Ottawa, gave us an opportunity of again viewing this excellent institution, and we with pleasure note that the institution is being kept up to date in every particular. A new and commodious office building is being constructed, and superior accommodations will thereby be furnished to all patrons of the colony. The staff of the colony has been enlarged, and it appears to be the constant effort of the authorities in charge to make the institution up-to-date and effective. A monthly journal is issued in the interest of all sufferers from tuberculosis.

Correspondence

PATIENTS FROM WHITE CROSS LEAGUE NOT RECEIVED

WAUKEGAN, ILL, Sept. 7, 1911.

To the Editor: The following letter was mailed to-day to Dr. D. C. Moulding, President of the National White Cross League Association:

"At a meeting of the Directors of the Lake County Tuberculosis Institute, held September 4th, it was unanimously decided to receive no more patients from the National White Cross League of Chicago.

Respectfully,

W. G. BOUTON, M.D., Secy.,
W. H. WATTERSON, Manager.

ALCOHOLIC PHYSICIANS.

CHICAGO, ILL., Sept. 17, 1911.

To the Editor: I can not do much, but such as I can, I am willing to do with the best of my power. I can not reform a lot of Doctors, but I can and hereby desire to express my appreciation of your editorial in last month's JOURNAL, on the change of attitude in the medical profession in reference to the liquor question.

I am positive in my conviction, that if medicine will arrive at the height to which it is destined to ultimately go, the drunken, tobacco-soaked physician must also go, for the Doctor by his example must lead a pure life, if he expects his fellow-beings to follow his example. I wish to thank you, and to encourage you along this line.

Sincerely,

DANIEL S. HAGER, M.D.

740 West Madison Street, Chicago, Ill.

COUNTY AND DISTRICT SOCIETIES

ADAMS COUNTY

The members of the Adams County Medical Society believe in the old saying: "All work and no play makes Jack a dull boy." Accordingly instead of the regular routine of business, the members went for a good time on August 9. They started early in the morning for the Big Lake Hunting and Fishing Club, which is situated several miles south of the city. The trip was made in autos, and the weatner being just right, caused every M.D. to smile. Various games and sports were indulged in during the day, and the doctors tried their physical strength in more than one way.

The most important events of the day were the delicious meals prepared by two excellent chefs, from Quincy. Everything edible and seasonable was procured. After such strenuous exercise, everyone's appetite was stimulated, and you know how the good things disappeared. This society holds an outing every year, usually during the month of August, and this one was voted one of the most enjoyable and best attended for many years.

September Meeting

The regular monthly meeting of the Adams County Medical Society was held Sept. 11, 1911, at the Hotel Newcomb. The meeting was called to order by President Knox. Others present were: Drs. Nickerson, Rice, Wells, Montgomery, C. R. Bates, Pearce, Stine, Koch, Irwin, Austin, Kirk Shawgo, Christie, Ericson, Knapheide, Warner, Williams, Ball, Center and Retiker.

The minutes of the last meeting were read and approved. The first matter for consideration was the proposed amendments to the Constitution and By-Laws of the State Society. After the reading of the same by the secretary it was moved and seconded that they be taken up in sections. Accordingly each amendment was thoroughly discussed before action was taken on it. When this business was completed it was time for lunch, so we repaired to the dining room.

In the afternoon a discussion was held concerning the advisability of securing a permanent meeting place. For this purpose a committee was appointed consisting of Drs. Irwin, Pearce and the president, Dr. Knox.

Resolutions relative to the consolidation of the two-telephone system were introduced and adopted by the society. The substance of the resolutions is as follows: That the two-telephone system is an annoyance, a burden, and unnecessary expense, and has been proved such in every city in which it has been tried. The same service can be given by the one-'phone without the annoyance and useless expense of the two-'phone system.

The scientific program consisted of a "Symposium on Cerebrospinal Meningitis." Very interesting papers were read by Drs. Montgomery, Pearce and Knapheide.

This was the first issue of *The Adams County Medical News*, the monthly bulletin of the society. Heretofore printed notices have been sent to the members, but the bulletin is the up-to-date way, and we want to be in style. Adjourned.

ALEXANDER COUNTY

The Alexander County Medical Association held its regular monthly meeting Wednesday evening, Sept. 20, 1911, at the Cairo Commercial Club rooms. A large number of physicians were in attendance. Reports on interesting clinical cases were heard and discussed. Dr. J. B. Hibbits read an interesting paper on "Dis-

locations." The discussion on the subjects was led by Dr. H. A. Davis, and was participated in by all present. Dr. Samuel Doods, vice-president, occupied the chair in the absence of Dr. S. B. Cary, president of the association.

Following the regular literary program luncheon was served.

CLAY COUNTY

The Clay County Medical Society met at Flora, August 8, 1911. The following were present: Drs. Shore, Walton, Bowman, Boyles, Hazel, Gilson, Oark and Dr. Kreider of Springfield. Dr. Kreider addressed the members of the Society on "Abdominal Surgery," which was very much enjoyed by all present. The Society adjourned to meet at Flora, in September.

COOK COUNTY

CHICAGO MEDICAL SOCIETY, ENGLEWOOD BRANCH

DOCTORS' HOBBIES

CHARLES HADDEN PARKER, M.D.

CHICAGO

Mr. Chairman, Fellow Practitioners and Ladies: I have been asked to speak to you to-night on "Doctors' Hobbies." I confess it is a hard subject to work on. I know not exactly where to begin or where to let go. But if one wishes to speak of it as a disease it can be classified as epidemic and contagious, but in no two persons are the symptoms the same. The onset may be sudden or gradual, with more or less fever or excitement. Patient is restless, often irritable, especially when other treatment is suggested. The duration of "hobbies" has quite a range. It is often a self limited disease. Sometimes the most severe attack is the shortest in length of time, but it does not render the patient immune to another attack, which may take another form. The immunity bath cannot be administered in this ever present "itis hobbium." It is most prevalent among Americans. It clutches the brain and mind of nearly every one at some time of his or her life, and carries them through a labyrinth of thought and actions, intensity of feelings, and hurries each on to do and delve into the hidden mysteries of earth. Strangely they follow the hobby, always thinking, ever dreaming of the ultimatum and the reward that will be theirs when the hobby is at last run down and captured.

As to the treatment of "hobbies," let patient alone, keep the mind hopeful and try and give a little relaxation at times but, assuming that patient is overridden with professional work, the hobby will be relaxation enough in itself.

The prognosis and sequelæ will be good, and the reward will be experience and knowledge not otherwise gained.

Now, friends, I am in favor of "Hobbies." They are a great thing. They are necessary to us as a nation. They tell me in Europe that fads and hobbies are what makes America what she is to-day. And hobbies are what the nation needs to develop its resourcefulness. A great many people deride fads and hobbies as wasters of time. I used to know an old man in California who had the airship and flying bug so bad that nearly every one considered him insane. I used to listen to him tell me that some day the air would be full of flyers, and that people would go from one city to another in them. He was very dignified and earnest and thoroughly believed in his own ideas. And that is what we all need; more faith in ourselves. And if we get a new idea, run it down, get all there is in it, and then try another. That is the way we educate ourselves. You each know well, that when you run down a hobby to your own satisfaction you know more about the subject than your neighbor, or more than you would if some one told you about it. Each of you no doubt have been deeply interested in a spe-

cialty, and have taken post-graduate courses to perfect yourselves in it. You may become interested in an idea and you begin studying it up with an earnestness equaling your post-graduate work, that is giving yourself a post-graduate course in the new idea.

It expands the brain, broadens the mind, and even if dropped is never entirely forgotten, and if ever the subject is brought into prominence one can talk intelligently on it. Herbert Spencer said that he learned a new language every few years, just to keep his brain active and facile. A hobby may show itself in many shapes or forms. One may be interested in wood working, metal working, leather working, art, literature, music and many other things.

You ask me what benefit hobbies have been to me. I will enumerate a few things. I and my children have built two houses with our own hands, one of cobble stones and cement, the other of wood. I can make a good violin. I can build an airship, make an automobile run when others fail. Make any sort of jewelry. My father taught me how to make a jack-knife that would cut out a hair. I can bind a book in any style, in short am able to make anything that I cannot afford to pay cash for, and get great pleasure out of the making. I must say that if one ever wishes to travel that person will find quite an advantage to be gained if he or she has successfully passed through the language hobby. For instance, if one goes to Europe, the French, German and Italian languages are mighty handy accomplishments to have. In my own family I encourage learning all they can about things that are useful, even if no future is in sight to make use of it. I studied at French, German, and Spanish languages evenings and after office hours, and each grown-up member of my family did also. We had no prospects of ever going abroad till suddenly a chance came, and you can imagine how well those languages came to our aid. I had been a camera enthusiast at one time and that also gave us many a souvenir of our trip not to be gained any other way. I have been a night student at the Art Institute for some time and found that sketches in color were pretty fine remembrances to bring home. I spent many an hour making sketches of the celebrated old masters in different cities abroad. Such studies are quite valuable here in America. We knew enough about art that we could intelligently go through a gallery and feel that we had gained something. My family and I have also studied several branches of music, and we had more pleasure listening to good music abroad than had we been ignorant of the subject.

I would suggest to one who has a liking for doing things with the hands that it is a fine thing to work metals, because many ornamental articles like jewelry can be made, and broken articles of value repaired. I tell you, friends, that I have great joy in the thought that I can repair almost any article that is broken and I can make any article that is needed. I am often confronted by someone who wants to know when I get time to do all these things. I can only say this, I have always been able to find time when I wanted to learn about some new thing. Where there is a wish strong enough there is always a road. And in closing I wish to add this much for serious thought. Do you, ladies and gentlemen, realize that so far as you and I know, there is only one life for each of us, and that there are no pockets in the costume we will at last put on? That we take ourselves too seriously; that we work as if we had a quit claim deed to future existence. Friends, breadth of thought gives knowledge, and knowledge gives capacity, and capacity is what one wants to get all that is worth having in the brief time each person is given to spin the dainty thread of life. My wish for each of you is, that you spin this thread so that you will get your full measure of vibrations from its beginning to its very end.

4002 Cottage Grove Avenue.

CRAWFORD COUNTY

The Crawford County Medical Society held its regular meeting September 14, in the Carnegie Library, Robinson, Ill. The meeting was called to order by the president Dr. G. H. Henry and the minutes of the previous meeting were read and approved.

The following members were present: Drs. Carlisle, Davis, Price, Newlin, Dunham, Firebaugh, H. N. Rafferty, Lowe and Henry.

Dr. J. W. Carlisle read an interesting paper on "Chronic Constipation," which was very well received. It was moved, seconded and carried that the paper be received for discussion, which was opened by Dr. H. N. Rafferty and participated in by the entire society.

A resolution from E. W. Weis relative to the members of a local medical society becoming ipso facto a member of the American Medical Society was read but no action was taken upon this matter.

Upon motion duly seconded and carried the Society adjourned.

A. LYMAN LOWE, Secretary.

MADISON COUNTY

The experiment tried at our last meeting was a magnificent success and resulted in the best meeting we ever had. The subject was "Law and Medicine," and was presented in a very able paper by Mr. C. H. Burton, of Edwardsville, and most thoroughly discussed by Morgan Le Masters, of Granite City, M. D. Powell and Judge W. E. Hadley, of Collinsville, Wm. P. Boynton, of Alton, and D. G. Williamson and Mallory Burroughs of Edwardsville. All of above named are prominent members of the Madison County bar, leading lawyers in this part of the state, and developed during the afternoon a vast amount of practical and valuable information. It was a great meeting and the secretary has been requested to arrange for a similar meeting in the near future. Dr. John H. Veatch and Dr. Fred E. Glauner, both of Marine, were admitted to membership.

Members present: Hirsch, Ferguson, Burroughs, J. H. Fiegenbaum, Sims, Smith, Yerkes, Merwin, Ihne, Hastings, Wahl, Barnsback, Pfeiffenberger, Dorr, Oliver, Brown, Kerchner, McKinney, Wharff, Cook, Wedig, Robinson, Sutter, Cowan, Everett, Zoller, King, Davis, Veatch, Glauner and E. W. Fiegenbaum.

Visitors present: Dr. D. S. Booth of St. Louis, Dr. C. W. Lillie of E. St. Louis, Dr. P. S. Weidman, Edwardsville, Dr. Thos. C. Marion of Worden. Dr. G. B. M. Ervin of Granite City, Dr. H. G. Baird of Edwardsville, Dr. Michael, veterinary of Collinsville, and Mr. W. K. Brown, medical student of Troy.

The next meeting will be held in Edwardsville October 6, when Dr. W. K. Newcomb, of Champaign, president of our State Society, will be our guest and the principal speaker.

M'LEAN COUNTY

The McLean County Medical Society met in regular session June 1, 1911, in Council Chambers, Bloomington, Ill. The president being absent, Vice-President Dr. Fred C. McCormick presided during the business session. Later Dr. J. L. Yolton was called to the chair. Committee on amendment to the constitution reported a proposed amendment to article 7, the report accepted and committee continued with instructions to report a general revision of constitution and by-laws. Dr. Chas. W. Ritter, of McLean, Ill., and Dr. M. Wallis, of Normal, Ill., were elected to membership in the society. The following resolution was unanimously adopted:

WHEREAS, Dr. Lee Smith has been an honored member of this society for fifty-five years, and when he reaches the next milestone will have lived four score years; as an evidence of our high regard and personal esteem for him be it

Resolved, That he be made a life member of this society.

Dr. Rhodes read a paper on "Medical Progress of the Year," and Dr. Vandervort a paper on "Surgical Progress."

Meeting of September 11, 1911

Dr. Carl E. Black of Jacksonville was the guest of the McLean County Medical Society at the regular session held in council chambers, Bloomington, Ill., Sept. 7, 1911. A few of the members enjoyed a social hour with the doctor at 6 o'clock dinner at the Illinois Hotel when they retired to the council chambers, where the regular session was called to order by the president, Dr. R. A. Noble.

After a short business session Dr. Black addressed us on "The Medical Library and Card Index System," laying special emphasis on the necessity of higher medical education, the society as the practitioner's post-graduate school, and the necessity of equipping such a school with a public medical library. He also explained the use of the Dewey system of classifications of subjects. The stereopticon was ably handled by Prof. Pearce of our city. The paper was well received by the society and will be of special aid to the Library Committee.

THOS. D. CANTRELL.

SANGAMON COUNTY

The Sangamon County Medical Society held its first fall meeting at the Lincoln Library, Springfield, Sept. 11, 1911, at 8:30 p. m. The time was given over to the consideration of clinical cases, several of which were presented and fully discussed. There was a large attendance and unusual interest in the proceedings.

ST. CLAIR COUNTY

On Wednesday, Sept. 6, 1911, occurred the conjoint meeting of the St. Louis City Hospital Alumni Association and the St. Clair County Medical Society. Priesters Park had been reserved for the event, and many doctors who attended, brought their wives and daughters. The weather was sultry, but Jupiter Pluvius did not intrude, remaining at a respectful distance until all guests had reached their respective homes. Considering that the weather was favorable; that the event had been advertised, and a good attendance agitated for a matter of seven months; that the first society has a St. Louis mailing list numbering 150 doctors, and the second a mailing list of 87 doctors; the attendance fell far below normal expectations.

Dr. Luedde, president of the City Hospital Alumni Association, being out of town, Dr. C. S. Skaggs, president of the St. Clair County Medical Society called the meeting to order at 4:45 p. m.

MEDICAL PROGRAM

1. Tumors of the Parotid Gland.—Dr. W. S. Wiatt, East St. Louis.
2. Vaccination: A Few Facts.—Dr. Joseph Grindon, St. Louis.
3. Ovarian Pregnancy at Term: Specimens.—Dr. W. C. Kirchner, St. Louis.

In addition Dr. Tharp of East St. Louis presented a clinical case of Elephantiasis and a collection was taken up for the benefit of the patient. Dr. Joseph Grindon of St. Louis, gave a lengthy talk on the "Etiology of Elephantiasis," and described the various filaria. Dr. Wiatt's paper on "Chondrifying Tumors of the Parotid Gland," was well received and ably discussed by Drs. Kirchner and Bailey of St. Louis. An argument arose between the latter two members as to the circumstances under which the facial nerve might be saved from injury in surgery of the parotid gland. Dr. Bailey maintained that whenever the entire gland was removed, the nerve was invariably severed; whereas Dr. Kirchner mentioned two cases in which he removed the parotid gland with its tumor and avoided facial paralysis.

Dr. Joseph Grindon lectured on "A Few Facts on Vaccination." He attacked the antivaccinationists and gave statistics which proved the value of vaccination as a protection against small-pox, and dwelt at length on the Franco-Prussian war. In this war the Germans were pretty generally vaccinated and their mortality from variola was very small, while the French, who were poorly vaccinated, lost more soldiers from small-pox than from battle wounds, even when the belated deaths from wounds were considered. Dr. Kirchner followed with a paper on "Ovarian Pregnancy at Term." He demonstrated the fetal sack and showed a photograph of the extracted child when nine months old. Dr. Kirchner was unable to find in the literature any other case in which an ovarian pregnancy had gone to term, and both mother and child survived the operation.

After the discussion of this subject the scientific program was closed, and all present, together with their lady guests adjourned to the banquet hall, where a table long enough to accommodate all guests was loaded with edibles; chickens incorrectly labeled 1911 formed the nitrogenous portion. During the banquet the Belleville orchestra rendered appropriate selections.

It had been planned to have the ladies entertained by a lady lecturer while the gentlemen attended the scientific meeting, but for some reason unknown to the writer she did not appear.

After the banquet dancing was in order, and at a late hour we deserted the park.

The only regrets expressed were that the ladies had to entertain themselves most of the time, and that the attendance was far below the expected and deserved number. Those present:

From St. Louis: Mesdames Welpby, Grindon, Falk; Misses Kirchner and Zimmermann; Doctors Simon, Theve, Falk, Grindon, Bailey, Kirchner, Horwitz, Whelpby, Kane, Mook, Hurford, Clapper, Gundlach, Pitzman and North.

From Belleville: Mesdames Raab, Massie, Wanglein, Hilgard and Miss Raab. Doctors Hansing, Miller, Otrich, Duey, Herold, West, Starkel, Hilgard, J. Twitchel, Raab, Rayhill, Reis, Massie, Wanglein.

From East St. Louis: Mesdames Rendleman, Campbell, Skaggs. Misses Meehan and Fekete. Doctors Campbell, W. E. Wiatt, Hagarty, Wiggins, Fairbrothers, Skaggs, Rendleman, Tharp, W. S. Wiatt, Cannady and Zimmermann.

If any names have been omitted, it has been done inadvertently.

CARL A. W. ZIMMERMANN, Secretary.

A UNIQUE FRACTURE OF THE UPPPER THIRD OF THE HUMERUS, ITS CARE AND ATTENTION *

DR. L. W. WRIGHT, M.D.,
ALEDO, ILL.

July 5, 1910, a patient, aged 21 years, was drawn into a lathe at the American Brake Company Works, St. Louis, Mo. Before the machinery could be stopped he had suffered four broken ribs and his left arm was fractured in two places. He was taken to the Association Hospital, where he was cared for. The patient's history of the case up to the time he came to my place is as follows: At the hospital they found a complete fracture of the upper third of the humerus, and of both bones of the fore arm, four broken ribs, and the nerves of the spine affecting the left leg were injured so that its use was impaired, causing him to have a dragging motion. Also the shock to the system affected the heart's action to some extent. They dressed the fractured upper third of the humerus with a wire splint that capped the shoulder on the outside of the upper arm and with a pasteboard splint on the inside of the upper arm and the forearm with pasteboard splints on the outside and the right-angle board splint to hold the arm in a right-angle position, which they left on for two weeks, when they removed the splints from the entire arm, redressing it with right-angle splint and the pasteboard splint on the outside of the arm. He remained in the hospital four weeks. About eleven weeks from the time of the accident they removed all the splints from the arm, but when they were removed the arm dropped limp to the side and he had no power in it. About five weeks after the splints had been removed he had more power and use of it than at any time before, since the accident; then he began to fail physically. He noticed the arm was shortening, the muscles of the arm were growing weaker and smaller and he was becoming more nervous and restless. His temperature subnormal, appetite poor, he was losing in weight and he felt he was becoming a physical wreck. He suffered all the time with his arm and of late it had been growing worse.

Feb. 17, 1911, he came to my home. His left arm was practically useless, hanging by his side, but if he held his elbow tight to his side with his right

* Read at a meeting of the Mercer County Medical Society.

hand he could work his fingers and hand a little, showing some power in the fore-arm. He suffered so with his arm that I persuaded him to let me examine it. On examining his arm I found the bones of the fore-arm were forming a bony union, but the fractured ends of the humerus had slipped past and overlapped about two and one-half to three inches, with non-union. There was a partial dislocation of the head of the humerus in and down, causing the shoulder to drop and the tissues in and around the seat of fracture were very sensitive and painful to the touch. I found the musculo-spiral nerve was affected (if not injured). I advised him to have an operation and have the bones of the humerus brought into position, correcting the deformity of the arm, relieving the musculo-spiral nerve and removing the danger of disease that was liable to result, and that if he did not there was danger of the bones becoming diseased and eventually an osteo-sarcoma forming. Dr. Sells of Aledo examined the arm, corroborated my diagnosis and advised the same; then I had Dr. Wallace of Aledo examine the arm and take an *x*-ray picture of the fracture of the humerus showing the position of the bones and the head of the humerus to further satisfy the patient, but they showed no disease of the bone and confirmed the diagnosis of the position of the bones.

Feb. 21, 1911, I went with him to Galesburg, Ill., and had Drs. Finley and Bradley examine the arm. They corroborated the diagnosis and advised an operation. Feb. 22, 1911, about eight months from the time of injury, Dr. Finley, after painting the surface of the arm with iodin, operated on the arm making an incision about five inches long over the seat of the fracture and down to the end of the bones laying them bare, finding the position of the ends of the bones as shown in the *x*-ray; but the ends showed a peculiar fracture resembling more of a twist and pulling apart. No bony union was found as the ends of the bones were overlapping outside the periosteum and rubbing on it. A little gristle had formed near the ends but the handle of a spatula soon removed it leaving them perfectly free. The lap was found to be about two and one-half inches and the ends of the bones were so ragged and somewhat softened it was decided to square off the ends down to the solid bone. After that was done it left so short a stub below the head of the humerus it was thought best to perform the Lane operation, bringing the ends of the bones together and fastening a Lane plate to them, putting two screws in each end of the plate to hold the ends of the bones firmly together and in position. I may state here that the antiseptic precautions of Lane had been followed out in placing the plate. Extension by hand was used to bring the bones in place and to correct the shoulder displacement. No disease of the bone or septic infection being found the deep structures were brought together tightly over the plate by catgut sutures, then the outer structures were closed up tightly by catgut sutures and the wound dressed with dry antiseptic dressing and left to heal by first intention. The arm was then dressed antiseptically and a plaster Paris cast was put on enveloping all the upper part of the chest like a jacket and enveloping the whole of the arm down to the wrist; the arm was placed out straight at right angle with the body and the cast allowed to set. The operation from the first incision until the last suture was taken lasted one hour and a quarter. The patient rallied nicely from the operation and at no time did his temperature run over 100.4. About the third day a window was cut through the cast over the wound so that it could be examined from day to day. He was kept flat on his back until about the end of the second week when no disturbance having arisen the patient was allowed to be raised up at about an angle of 45 degrees. He remained in the hospital four weeks, then the plaster Paris cast was removed and the arm was dressed with pasteboard splints around the shoulder and above the elbow so that they could be removed to dress the wound. The wound was still discharging serum and a bed sore or ulcer was found at the elbow about the size of a quarter. March 23 he left the hospital and returned to my home. The wound was still discharging a yellowish

serum darker at times and the ulcer at the elbow had a greenish center but no discharge. It was very sensitive and ached and pained a good bit. The elbow was swollen quite a little when he came home. I cleansed the wound with a calendula lotion, syringing it out twice a day, put on a sublimated gauze (absorbent) and replaced the splints over the dressing, continuing this treatment for several days. After trying different ointments and plaster without benefit I dressed it with sterate of zinc; to aid healthy granulation I removed the green center of the ulcer after I began to use the sterate of zinc but it would form as bad as ever. His appetite improved and his rest and sleep kept improving but the wound would not stop discharging nor would the ulcer heal. In the meantime Dr. Winbigler of Aledo saw the case and thought the sinus reached the bone. April 4th the wound appeared to open up from a new pocket and discharged about a half ounce of dark watery fluid but at no time has there been any odor about the discharge. I saw Dr. Finley April 4, and he advised the injection of an iodin solution into the open wound with a medicine dropper once a day, and to give the patient Blaud's soft pills one three times a day. From the first injection of the iodin solution, the discharge grew less and in two or three days stopped altogether and the opening closed. There has been no sign of any discharge since. The tissues grew firmer, the swelling, soreness and acheing continued to leave the upper arm, but the ulcer refused to heal. The sterate of zinc seemed to aggravate it. Antiphlogistine would remove the soreness and the swelling from the elbow but not heal the ulcer nor remove the green center. April 13 Dr. Finley advised balsam Peru as a local application and from the first application the ulcer commenced to clean and heal from the outside. The green center came out leaving a healthy surface and continued to heal over. I dressed it once a day. The upper wound having shown no further sign of irritation, the tissues became quite firm and the ulcer having healed over at the elbow another *x*-ray picture was made of the arm before leaving off the splints. Dr. Finley saw the case on April 27. The *x*-ray showed a good bony union forming and a slight springing out of the upper end of the plate. Dr. Finley advised removing all splints from the arm and to begin to manipulate it and to leave off the sling as soon as possible. He found the mobility of the shoulder and elbow joints all right but stiff from non-use. From that time forward his arm continued to improve in strength and in motion, the shoulder straightened up, his left leg came out all right and to see him stand up straight you would never know that he was at one time threatened with being a life long cripple. He now has as perfect an arm as any one with about an inch shortening. He had suffered at times with rheumatic pains and aches but no time has he shown the characteristic bone pain. As to internal treatment he has taken at times as indicated by his suffering such remedies as Ars., Bell, Bry., Arn., Nitric Acid and Lyc. The arm has been examined at different times since the patient came to my home by the following physicians: Drs. Sells, Wallace, Winbigler, Finley, Bradley and Bryant.

MORAL

Can we be too careful in our treatment of fractures to prevent life-long cripples? To what extent is it our duty to see that they follow out our instructions to prevent such deformities; and is it not our duty to our fellow beings when we see such cases as this one I have described above to persuade them to have the same corrected?

NEWS OF THE STATE

NEWS ITEMS

—Dr. C. H. Zoller was appointed County Physician for Nameoki.

—Dr. John A. Cavanaugh of Chicago is visiting the various nose and throat clinics of the East.

—Dr. W. E. Barton, a graduate of Barnes Medical College, has recently located at Wood River.

—Rev. Peter Kaenders of Venice has purchased the Lutheran Hospital at Granite City for $55,000.

—Dr. R. W. Binney and daughter of Granite City spent the past month in Atlantic City. The doctor also attended the clinics at Johns Hopkins Hospital, Baltimore, and at Jefferson Medical College, Philadelphia.

—Dr. James A. Britton, chief physician of the Juvenile Home, Chicago, has resigned as a protest against the "Bartzenizing" of that institution. It seems that every physician in the employment of Cook County has either been "fired" bodily by Bartzen or forced to resign by intolerable interference.

PERSONAL

Dr. J. K. Egbert, Sycamore, has sailed for Europe.

Dr. Wallace Blanchard, Chicago, has returned from Europe.

Dr. and Mrs. Philip F. Schaffner have returned from an eight months' trip abroad.

Dr. L. M. Griffin has been appointed local surgeon at Polo for the Illinois Central System.

Dr. Elmer L. Kenyon of Chicago has sailed for Europe and will spend four months in study in Berlin.

Dr. Perry H. Wessel has succeeded Dr. August H. Arp, resigned, as health commissioner of Moline.

Dr. Emerson M. Brewer, Rantoul, has been appointed district physician of the Illinois Central System.

Dr. Edwin B. Tuteur, Chicago, has returned from Europe and will resume his practice in Suite 809, Columbus Memorial Building.

Drs. Ludvig Hektoen and Anton T. H. Holmboe received the honorary degree of doctor of medicine in connection with the centennial jubilee of the University of Christiania, September 8.

Dr. Sidney D. Wilgus, superintendent of the Elgin State Hospital, has been appointed superintendent of the Kankakee State Hospital, vice

Dr. Frank P. Norbury, appointed a member of the State Board of Administration to succeed Dr. James L. Greene, Springfield, who resigned to take charge of the Arkansas State Hospital at Little Rock.

REMOVALS

Dr. H. L. Smith has removed from Ivesdale to Chicago.

Dr. C. J. Buffington has removed from Litchfield to Decatur.

Dr. Martha Hayward has removed from Aurora to Boulder, Colo.

Dr. L. C McCabe of Chicago has removed to Grant's Pass, Oregon.

Dr. F. H. Deane has removed from Hindesboro to Humboldt, Ill.

Dr. Harlan E. Mize of Danville, Ill., has removed to 5314 South Park Avenue, Chicago.

Dr. A. M. Calvert of Chicago has removed to 523 East Monroe Street, South Bend, Ind.

Dr. Charles H. Merritt of Alton has gone to Alaska to become camp physician for a large placer mining company.

Dr. H. R. Lemen of Alton will remove to San Francisco, where he will locate and continue to practice his profession.

NEW INCORPORATIONS

—Independent Western Star Order Hospital Association, Chicago; to furnish hospital service; incorporators, I. Shapiro, A. R. Fifer, Dr. S. Stol.

—The Gold Cross Medical Aid Association, Chicago; capital $20,000; manufacturing drugs and medicines; incorporators, George A. Kilborn, George W. Kilborn, Horace M. Denholm.

PUBLIC HEALTH

—Dr. W. A. Evans, former health commissioner of Chicago, is conducting a public health column in the Chicago *Daily Tribune*, under the caption "How to Keep Well."

—The Medical Department of the Tulane University of Louisiana announces the inauguration of a department of tropical medicine and preventive medicine beginning Oct. 1, 1911, in charge of Prof. Creighton Wellman and staff. Laboratory courses and lectures will be given in the regular junior and senior classes and in addition graduate courses are offered, for which certificates will be issued, counting toward special degrees to be created as soon as the Tulane School of Tropical Medicine is in force.

—The exhibit of the Chicago Health Department at the Canadian National Health Exposition in Toronto was surrounded, as at the Child Welfare Exhibit in Chicago, by throngs of interested spectators aggregat-

ing 400,000 during the three weeks of the meeting. On both occasions the mechanical models devised by Dr. C. St. Clair Drake to demonstrate the necessity for ventilation and the mortality of young children were the subjects of the greatest interest. Earl Grey, the Governor General, obtained permission from the commissioner of health to reproduce the models for exhibition in Ottawa, Montreal and other cities of Canada.

—Early detection of tuberculosis in an employee is of great importance to himself, his coworkers and his employer.

The chance of ultimate "cure" or "arrest" as well as restoration of the working capacity gradually diminishes with the growth of the disease. The possibility of infecting others grows with the gradual transformation of a "closed" lesion into an "open" tuberculosis, with its swarm of tubercle bacilli in the sputum. The interests of employer are alike vitally affected by the gradual diminution of the productive capacity of a tuberculous employee.

These considerations call for a system of medical examination of employees in all working places, as a measure of great importance to all

Fig. 1.—Sears, Roebuck & Co.'s cottage.

concerned, the expense entailed in the maintenance of examinations being far outbalanced by the benefits derived.

As a result of the efforts made by the Chicago Tuberculosis Institute during the last two years to interest manufacturing concerns in the medical examination of their employees, several of the larger firms in this city have recently put into operation measures calculated to reduce the amount of tuberculosis among their employees.

Two years ago, the firm of Sears, Roebuck and Company built a six-bed cottage (Fig. 1) at the Edward Sanatorium, at Naperville, for the care of their tuberculous employees, and at the same time the firm instituted a system of examination of all employee who showed symptoms of the disease.

The firm of Montgomery, Ward and Company have just completed a model six-bed open air cottage for the care of their employees at the same institution; the cottage was opened for admission of patients on Monday, July 24, 1911 (Fig. 2).

At a recent meeting of the Executive Committee of the Chicago Tuberculosis Institute, Dr. Theodore B. Sachs presented a plan of systematic examination of employees for tuberculosis in various manufacturing establishments. The plan, approved by the Committee, was adopted by the International Harvester Company, as result of negotiations between Dr. Sachs, representing the Tuberculosis Institute, and Mr. G. A. Ranney, representing the Harvester Company. In brief, the plan is as follows:

Under the guidance of the Advisory Committee on Factories, appointed by the Tuberculosis Institute, and made up of Dr. Theodore B. Sachs, Dr. Henry B. Favill and Mr. Sherman C. Kingsley, the International Harvester Company will begin an investigation of prevalence of tuberculosis among their employees. A list of suspected cases will be prepared by a special tuberculosis nurse, who will have the cooperation of foreman in charge of factories of the Company. The list will include the following groups of cases:

Fig. 2.—Montgomery Ward & Co.'s cottage.

First.—Employees in whom the diagnosis of tuberculosis was previously made.

Second.—Employees in whom poor general condition in connection with other suspicious symptoms suggests the presence of the disease.

Third.—All employees with histories of protracted cough and expectoration.

Fourth.—Employees in whose families a case of tuberculosis exists or death from disease occurred, etc.

When the list of cases is compiled, a special tuberculosis clinic will be inaugurated for the benefit of the employees of the Company.

Dr. James A. Britton of this city and Miss Jane Flanagan, a tuberculosis nurse recently on the staff of the Chicago Municipal Sanitarium, were placed by the International Harvester Company in charge of the proposed clinic, on recommendation of the Advisory Committee of the Tuberculosis Institute.

It is expected that this investigation, besides disclosing the degree of prevalence of tuberculosis among employees of the Company, will bring

eventually under consideration the necessity of systematic medical examination of all employees and applicants for positions in various manufacturing and commercial establishments in this city.

The directors of the Chicago Tuberculosis Institute announce that they are now ready, through their Advisory Committee on Factories, to act in an advisory capacity with other large employers of labor, to the end of having the plan more generally adopted.

TWENTY DAIRY SUGGESTIONS

The following suggestions to dairymen have been printed in practically indestructible form and are now being posted in the barns of all dairies which produce milk or milk products for the Chicago market:

Cows:

1. The herd should be tested with tuberculin twice each year. Remove all tuberculous cows promptly. But only recently tuberculin tested cows.

2. Don't excite dairy cows by fast driving or otherwise. Do not permit cows to stand in mud or wade in ponds or ditches.

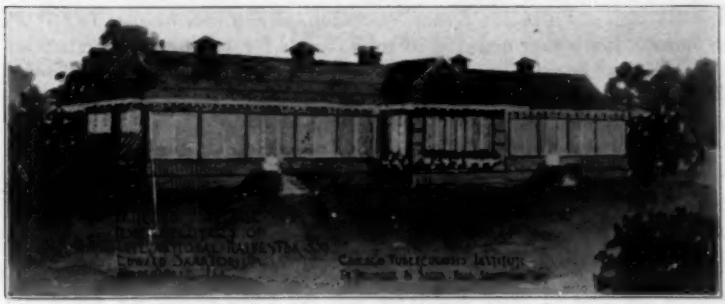

Fig. 3.—International Harvester Company's cottage.

3. Keep clean the entire body of the cow; clip short the udder hair.

4. Never give spoiled, decayed or soured food.

5. Provide plenty of fresh, pure water.

Stables:

6. Keep cows in stable completely separated from horses. Ceiling of stables must be tight if loft is kept above.

7. Stable should be dry, light (four square feet glass per cow); 500 cubic feet of air space per cow, well ventilated, without drafts on cows.

8. Floor must be tight; cement is best; walls and ceilings to be smooth, tight and clean, whitewashed twice a year.

9. Remove manure daily to field, or store under cover, 40 feet away from stables.

Milk houses:

10. Locate away from dust, odors, hogs, etc. Should be light, clean, well ventilated and well screened. Provide with cement cooling vat and cement floor.

11. Use utensils of metal only, with smooth seams; never rusty or rough. Milk utensils must be used only for milk.

12. Clean utensils in pure water only. Rinse with warm water, scrub inside and out with hot cleansing solution and rinse, sterilize with boiling water or with steam; then keep utensils in an inverted position in sun and pure air.

Milk and milk handling:

13. Do not raise any dust within half hour before milking time; hence, do not feed or bed cows within that time.

14. Wipe udder and surrounding parts with a clean, damp cloth immediately before milking.

15. Milkers must wear clean outer garments. Wash hands before milking. Milk with dry hands. Do not use tobacco.

16. Use a milk pail with a narrow top, preferably with a strainer or a hood.

17. Milk which is bloody, stringy, or into which hair or dirt has fallen should be discarded.

18. Take milk of each cow immediately to milk room. Strain at once through clean cotton flannel or cotton. *Then cool at once to 50° F. or lower.* Have thermometer in milk house for testing temperature of water.

19. Never mix morning and evening milk. Never allow milk to freeze.

20. Persons with typhoid or other contagious disease, or persons exposed to same, must keep away from cows, utensils and milk. Immediately notify this Department and your milkman of any contagious disease on your farm or in the neighborhood.

Attached to this poster is a form on which the Dairy Inspector records the date of each inspection and the point scored for the dairy. A perfect dairy will score 100 points. Any dairy falling below 65 points is considered unsafe, and if the conditions which are militating against the production of a safe milk are not remedied the supply from this farm is denied entry to the Chicago market.

Dairymen shipping milk or milk products to the Chicago market are required to keep these inspection records posted on their premises.

If the Chicago milk consumers would interest themselves more in learning the record of their milk producers there would be a more general endeavor among producers to improve their records. The Department of Health will furnish this information on request, stating your city milkman.—*From Bulletin Chicago Department of Health.*

MARRIAGES

JOHN W. ROST, M.D., to Miss Adela Peine, both of Minier, Ill., June 14.

FREDERICK AMON BERRY, M.D., to Miss Amy Gust, both of Chicago, July 26.

KATE ARMSTRONG, M.D., Kewanee, Ill., and Leroy Ewan of Cuba, Ill., August 17.

CHARLES FORD, M.D., to Miss Olive Green, both of Waggoner, Ill., at St. Louis recently.

JAMES N. SHEARL, M.D., Middletown, Ill., to Miss Bertha M. Nicholson of Tower Hill, Ill., August 2.

LEONARD LUCIUS LAMB, M.D., Chatsworth, Ill., to Miss Gertrude Snevely of Monon, Ind., August 30.

DEATHS

JACOB BIEGER, M.D., Chicago Homeopathic Medical College, 1899, died at his home in Forest Park, Ill., August 6, from aortic aneurysm, aged 42.

JOHN W. PRIMM, M.D., Hahnemann Medical College, Chicago, 1878; for many years a practitioner of Woodstock, Ill., died at his home in Pasadena, Cal., July 26, aged 60.

RALPH N. GORDON, M.D., University of Michigan, Homeopathic College, Ann Arbor, Mich., 1897; for thirty-five years a practitioner of Arlington, Ill., died at his home in Seattle, Wash., August 7, aged 69.

JOHN DUKE WALLER, M.D., Rush Medical College, 1883; a member of the American Medical Association; for five years assistant physician in the Jacksonville (Ill.) State Hospital; died at his home in Oak Park, August 22, from uremia, aged 59.

GEORGE JOHN SCHALLER, M.D., Rush Medical College, 1881; a member of the American Medical Association, died at his home in Chicago, August 10, from the effects of a gunshot wound of the head, believed to have been self inflicted with suicidal intent, while despondent, aged 51.

EDWARD O. GRATTON, M.D., (years of practice, Illinois, 1878), hospital steward and acting assistant surgeon U. S. Army, assistant to the Seventy-Second Illinois Volunteer Infantry during the Civil War; a member of the first board of trade of Chicago, died at his home in Harvard, Ill., August 18, aged 84.

WALTER OWEN RYAN, M.D., Washington University, St. Louis, 1882; a member of the American Medical Association and President of the Sangamon County (Ill.) Medical Society in 1909; a prominent practitioner of Springfield, and attending physician to St. John's Hospital, but for the last year a resident of Los Angeles, Cal., shot and killed his wife and himself at his home in Los Angeles, September 1, while mentally unbalanced.

OBITUARY

Dr. Walter Owen Ryan of Springfield, who had recently gone to California, on the first of September, 1911, while in a condition of paranoia, shot Mrs. Ryan and then committed suicide. Dr. Charles Ryan, father

of Dr. Walter Owen Ryan, began practicing medicine in Springfield in 1853, and his son began practicing in Springfield about 1879, two years before he came of age; he afterward graduated at the St. Louis Medical College and continued in practice until 1910. Father and son practiced in the one community for nearly sixty years.

Probably no person in the history of Springfield had ever as extensive a practice as Dr. Walter Ryan during about ten years of his life. His practice was very luerative, and Dr. Ryan was saving, even penurious, regarding money matters. His estate is said to amount to something like $600,000, one of the largest estates ever accumulated by a medical man in Illinois.

The bodies of Dr. Ryan and his wife were brought to Springfield and interred in Oak Ridge Cemetery on Wednesday, September 6. A very large congregation of people attended the funeral service.

Dr. Ryan's age was about 50 years. His wife was the daughter of R. W. Diller, one of the oldest settlers in Springfield, and the druggist in whose store Mr. Lincoln made his headquarters.

Dr. J. H. Dickerson of Taylorville died in that city September 15 after a long and painful illness. His remains were cremated in St. Louis and will probably be interred in Oak Ridge, Springfield, later.

Dr. Dickerson was a man of powerful frame and constitution which were very slow to succumb to the ravages of tuberculosis. He had practiced for more than forty years in Christian County, but had spent five years of residence and practice at Los Angeles, Cal. His age was 63 years.